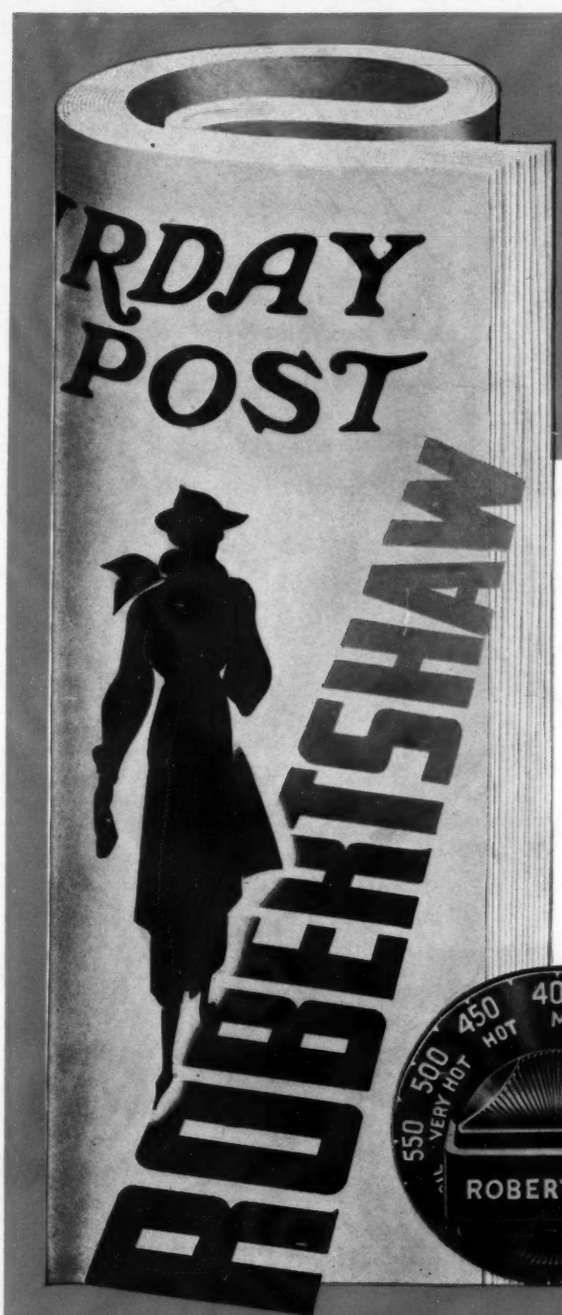
WESTERN GAS

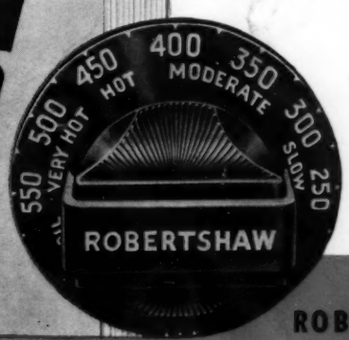


Sold IN ADVANCE

● For 14 years, Robertshaw advertising has prompted American housewives to see what a new gas range could do for them. More than two million women have found out—for the Robertshaw oven control lightens their kitchen work every day of their lives!

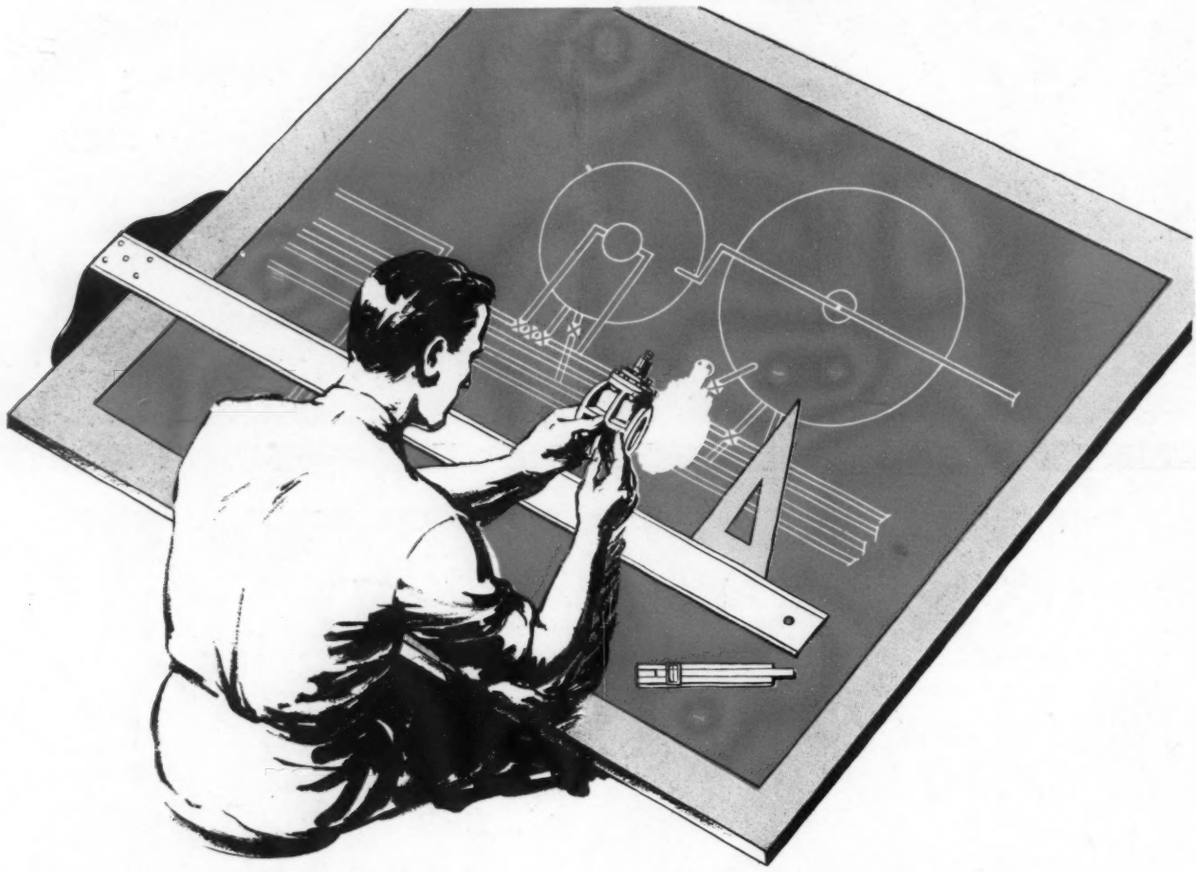
This year, as in years past, the right oven control is a most important consideration in any sales plan. Gas range manufacturers know this—and so do the most successful retailers of gas ranges the country over. For it's not just a matter of sales, but of service—the gas range with the Robertshaw seldom entails any expense for oven repair or adjustment.

With Robertshaw using regular space in The Saturday Evening Post—the greatest selling force the country possesses—you have a definite consumer interest to tie up to in all your gas range activities. This applies just as much to your advertising and demonstrating as it does to direct selling. If you take the oven control for granted, somebody else is apt to take the sale!



ROBERTSHAW THERMOSTAT COMPANY
Youngwood, Pa.

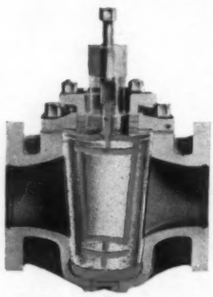
April 1935 ♦ ♦ 25 Cents



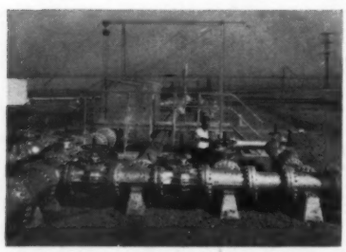
NORDSTROMS fit into your Engineering Plans

In any plan for new gas line or plant construction or replacements, your valve selection hinges primarily upon these salient features: *Flow control, ease of operation, positive shut-off, operating efficiency, length of service, safety factor, compactness and simplicity.*

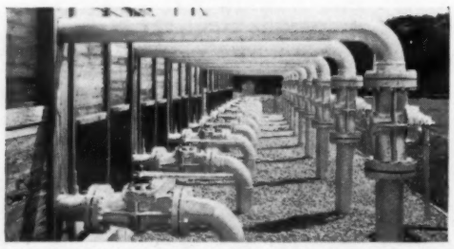
Nordstrom Lubricated Valves FIT your requirements perfectly. They offer a minimum of 100% safety factor. Available in pressure ratings up to 3000 pounds. Positive shut-off and long life because of "Sealdport" lubrication. Quick operation through quarter-turn. Economy of space because of compactness and simple construction. Insured quality and safety by rigid inspection and safety factor.



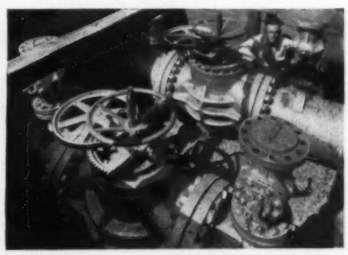
A wide range of types and sizes is available; also gate valve face-to-face dimensions.



Nordstroms on Regulating and Metering System on natural gas transmission system.



24" Nordstrom Valves on cooling tower in gas booster station.

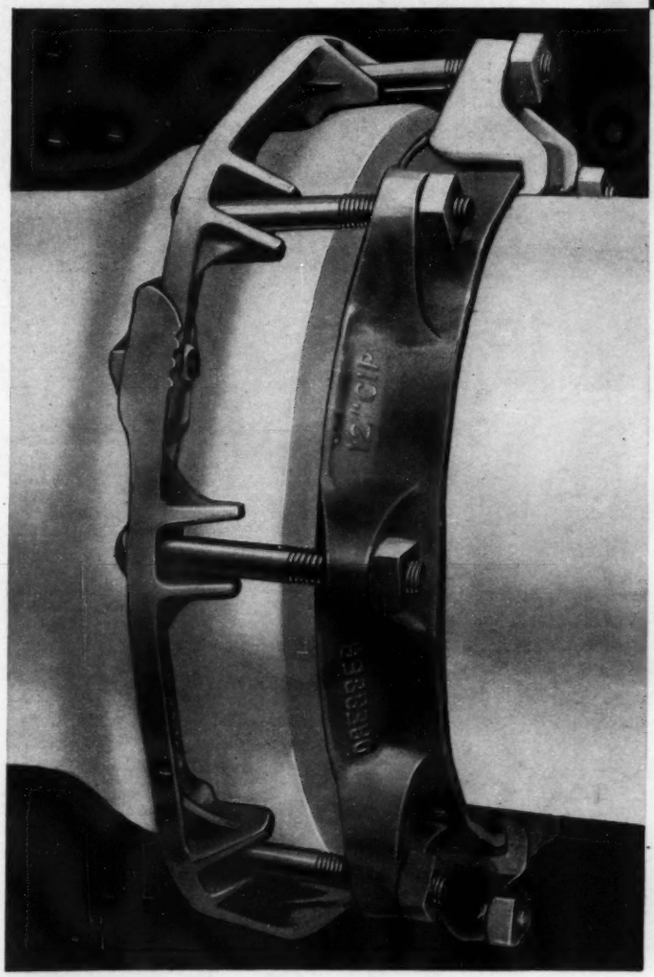


Sectionalizing and Blow Down Valves on parallel high pressure transmission lines.

MERCO NORDSTROM VALVE COMPANY *A Subsidiary of* **PITTSBURGH EQUITABLE METER CO.**

Main Office: Pittsburgh, Penna. *Branch Offices:* New York City, Philadelphia, Columbia, Memphis, Chicago, Kansas City, Tulsa, Houston, Los Angeles, Oakland

HIGH GASKET PRESSURES *Assured*



by these 6 features

1. ADJUSTABLE FOLLOWER RING WITH UNIFORM STRENGTH AND RIGIDITY
2. CONTINUOUS GASKET RECESS WITH FOLLOWER RING ADJUSTABILITY
3. RADIAL CONFORMABILITY WITH AXIAL STRENGTH AND STIFFNESS
4. ADJUSTABLE ANCHOR RING WITH INTERLOCKING SECTION JOINTS
5. EXCLUSIVE TIME-PROVED OIL-RESISTING GASKET
6. SELF-ALIGNING FOLLOWER-RING BOLT HOLES . . .

ONLY the Dresser Style 60 combines these 6 features . . . ONLY the Dresser Style 60 is Sealometer developed and proved! . . .

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BELL JOINT CLAMPS

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ADVERTISERS' INDEX

The American Brass Company	33
American Cast Iron Pipe Co.	51
American Gas Products Corporation	29
American Meter Company	8
The Barrett Company	7
H. R. Basford Company	52
The Bristol Company	53
The Cast Iron Pipe Research Ass'n.	3
The Chaplin-Fulton Mfg. Company	56
The Cooper-Bessemer Corporation	—
Dearborn Chemical Company	54
Denver Fire Clay Co.	50
Detroit-Michigan Stove Company	31
S. R. Dresser Mfg. Company	1
Electrogas Furnace & Mfg. Co.	46
Electrolux Refrigerator Sales, Inc.	27
Fluor Corporation, Ltd.	47
Fraser Furnace Company	52
General Ceramics Company	48
James Graham Manufacturing Co.	55
Handbook Butane-Propane Gases, 2nd Edition	34
Johnson Gas Appliance Co.	51
Kerotest Mfg. Co.	36
The Linde Air Products Co.	—
Merco Nordstrom Valve Co.	2nd Cover
Minneapolis-Honeywell Regulator Co.	50
Mueller Co.	3rd Cover
The National-Superior Co.	49
National Tube Company	5
Natural Gas Equipment Inc.	47
Oxweld Acetylene Co.	—
Pacific Coast Gas Association	42
Pacific Gas and Electric Company	45
Pacific Gas Radiator Co.	54
Payne Furnace & Supply Co.	48
Peerless Manufacturing Corp.	51
Pittsburgh Equitable Meter Co.	2nd Cover
Pressed Steel Tank Company	37
The Prest-O-Lite Co., Inc.	—
Reliance Regulator Corp.	38
Republic Steel Corporation	Back Cover
Reynolds Gas Regulator Co.	49
Robertshaw Thermostat Co.	Front Cover
Geo. D. Roper Corp.	—
Safety Gas Main Stopper Co.	50
M. B. Skinner Co.	6
The Sprague Meter Company	53
Surface Combustion Corp.	—
Union Carbide & Carbon Co.	—
Union Carbide Sales Co.	—
United States Pipe and Foundry Co.	4
Utility Development Co.	46
Webster Engineering Co.	—
Welsbach Company	52

WESTERN GAS

"Reg. U. S. Pat. Off."

Publication Office: 810 South Spring Street, Los Angeles, Calif.
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Contents for April, 1935

Selling in the Face of Government-Sponsored Competition . . . 9
By W. W. Winter

Every Employee a Salesman . . . and Paid for It 11
By C. H. Zachry

A Long-Term Sales Plan for Ranges and Water Heaters . . . 12
By George H. Finley

Ideal Gas Consumption Curves for Brick-Firing 14
By Bruce L. Sweet

Replacing Service Men with "Sales Mechanics" 15
By C. A. Renz

The Peoples Gas Suggestion Plan . . . . *By Craig Espy* 16

The P. G. and E. Public Relations Audit 17
By Robt. L. Eltringham

ABSTRACTS BY THE STAFF 18

- Municipal Ordinances Pertaining to Gas Business 18
- Effect of Soot on Heat Transmission in Boilers 18
- Calculating Unit Heater Operating Costs 19
- Designing and Selling Vented Heating 20
- Sale and Installation of Domestic Water Heaters 21
- Conditioning Industrial Process Atmospheres 22
- Leakage Survey on a Cast Iron Distribution System 22
- Handling Enameled Gas Kitchen Appliances 23

Long-Term Selling by B. C. Electric Railway . *By J. Lightbody* 30

Houston Gas & Fuel Radio Kitchen . . *By Fannie W. Hoff* 32

BUTANE-PROPANE NEWS 35

MEASUREMENT AND CONTROL 39

Measuring Spray Water Volumes at Cooling Towers 39
By J. B. Reddick and Chas. F. Briscoe

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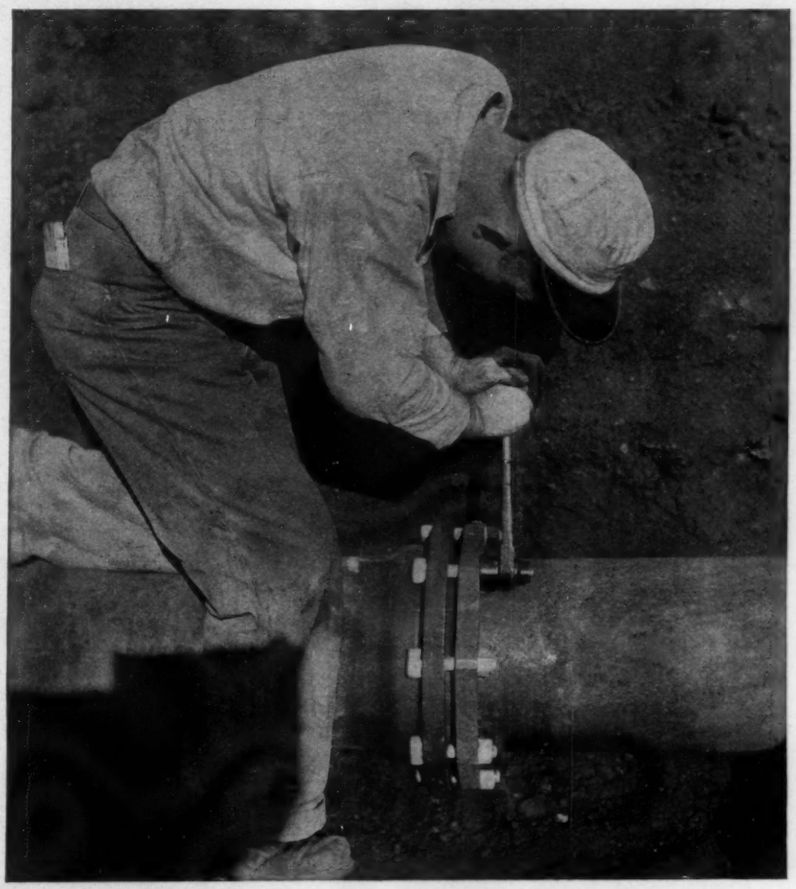
LONG LIFE PIPE

with gas-tight mechanical joints

Every element of assurance—history, official tests, record in the field—backs the judgment of the gas engineer who uses cast iron pipe with mechanical joints. The pipe material offers unequalled long life with negligible maintenance cost. The joints, as made by Cast Iron Pipe Research Association members, are bottle-tight as demonstrated by rigid tests made in 1932 by the laboratory of the American Gas Association. They vary in design but are identical in principle.



The Cast Iron Pipe Research Ass'n, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Bldg, Chicago, Ill.

CAST IRON PIPE

METHODS OF EVALUATING BIDS NOW IN USE BY ENGINEERS RATE THE USEFUL LIFE OF CAST IRON PIPE AT 100 YEARS

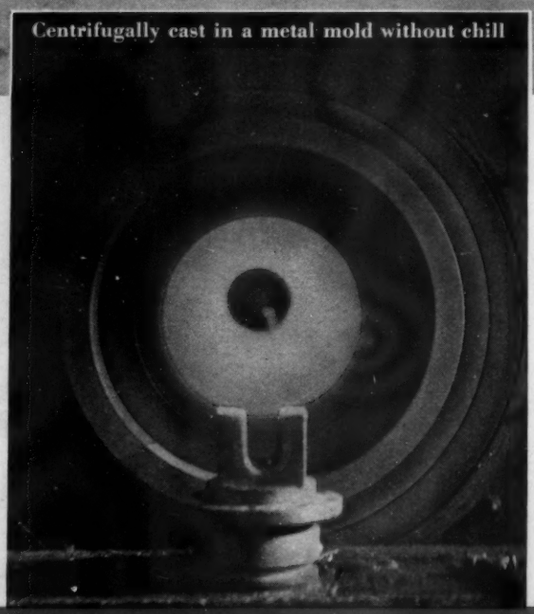
TRADEMARK REG.

Recent installation of Super-de Lavaud Pipe at Chehalis, Washington.

MANUFACTURERS go to great lengths to protect their products from the hazards of transportation as evidenced by the development of specially designed trucks, cars and containers now in use. But in the case of cast iron pipe, increased protection from plant to underground must be inherent in the pipe itself. We have accomplished this by *doubling the impact-strength* of the pipe.

In seeking this maximum protection for our pipe, we have developed and patented a new method of manufacturing cast iron pipe, known as the Super-de Lavaud Process, which is regarded by metallurgists as an important advance in the art of casting gray iron.

Super-de Lavaud Pipe is centrifugally cast in a metal mold without chill. The result—as purchasers of nearly eight million feet of Super-de Lavaud Pipe already know—is a pipe with extraordinary impact-strength, toughness and ductility. The process is explained in a booklet we shall be glad to send upon request.



Centrifugally cast in a metal mold without chill

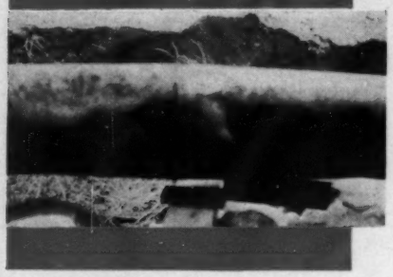
U.S. SUPER-de LAVAUD PIPE

CAST WITHOUT CHILL IN A METAL MOLD

UNITED STATES PIPE AND FOUNDRY CO., General Office: BURLINGTON, N. J.

Foundries and Sales Offices throughout the United States

A cloudburst! Then a terrific washout - *and not a failure in the pipe line!*



• • • *outstanding proof of the stamina of steel gas lines*

Recently in the Beaumont district in California a cloudburst struck a canyon not far above a NATIONAL Pipe Gas Line. With overwhelming force, a raging torrent rushed down, bringing enormous quantities of debris and boulders against the line. As an example of the volume of water and its force, a tractor was washed more than a mile down the stream from where the accompanying photos were taken. Although the pipe was dented and scarred from the terrific punishment of this washout, not a single failure occurred in the line.

Here is another demonstration of the tremendous strength and stability of NATIONAL Steel Pipe. It shows why this material is being increasingly used for long gas lines traversing rough and uncertain territory. Likewise for city mains, it is coming into use more and more. Vibration (heavy street traffic), cave-ins, trench pressures and such other factors are easily met by the great tensile strength and ductility of NATIONAL Pipe. NATIONAL engineers will be glad to furnish gas companies desired information regarding NATIONAL Pipe in connection with any pipe line project. Correspondence is invited.

ADVANTAGES of NATIONAL STEEL PIPE

Reliability—Great tensile strength—A high degree of ductility—Adaptability for any type of joint—Less interruption to service—Lower laying costs—Longer lengths—Tight joints and less joints per mile—Various coatings available for bad soil conditions.

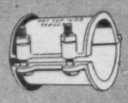
NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

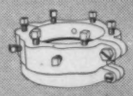
United States Steel Corporation Subsidiary

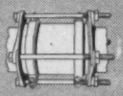
NATIONAL STEEL GAS MAINS

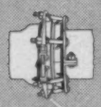
SKINNER

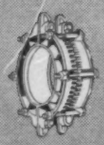

EMERGENCY PIPE CLAMP

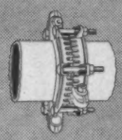
PIPE LINE CLAMP


PIPE JOINT CLAMP


COLLAR LEAK CLAMP


BELL JOINT CLAMP


SPLIT COUPLING CLAMP


HIGH PRESSURE WELD CLAMP

SERVICE SADDLE

PRESSED STEEL ECONOMY CLAMP

A CLAMP FOR EVERY LEAK

PRESSED STEEL ECONOMY CLAMP

● The Skinner Pressed Steel Economy Clamp is made of full 3/16″ hot pressed steel plate, with sturdy wedge shaped lugs pressed out of the material itself. Full takeup pressure is applied directly to gasket.

● Stops the leak instantly and permanently. Later, if desired, the half of clamp which covers the leak can be welded on as a patch—the other half used again.

● Not a makeshift, but a factory precision clamp at less than homemade cost. Comes in two widths—3½″ wide with single bolt and rubber cone gasket *for repairing pit holes in pipe lines.* 6½″ wide with two bolts and pressure-equalizing strip gasket of soft tire stock, *for running corrosion spots.* (See bottom illustration in border at left.) Clamps are enamelled, with cadmium plated steel bolts for pipe sizes from 6″ to 24″. Write for discounts and complete catalog.

M. B. SKINNER COMPANY
Manufacturers and Engineers • Est. 1898
SOUTH BEND • • INDIANA

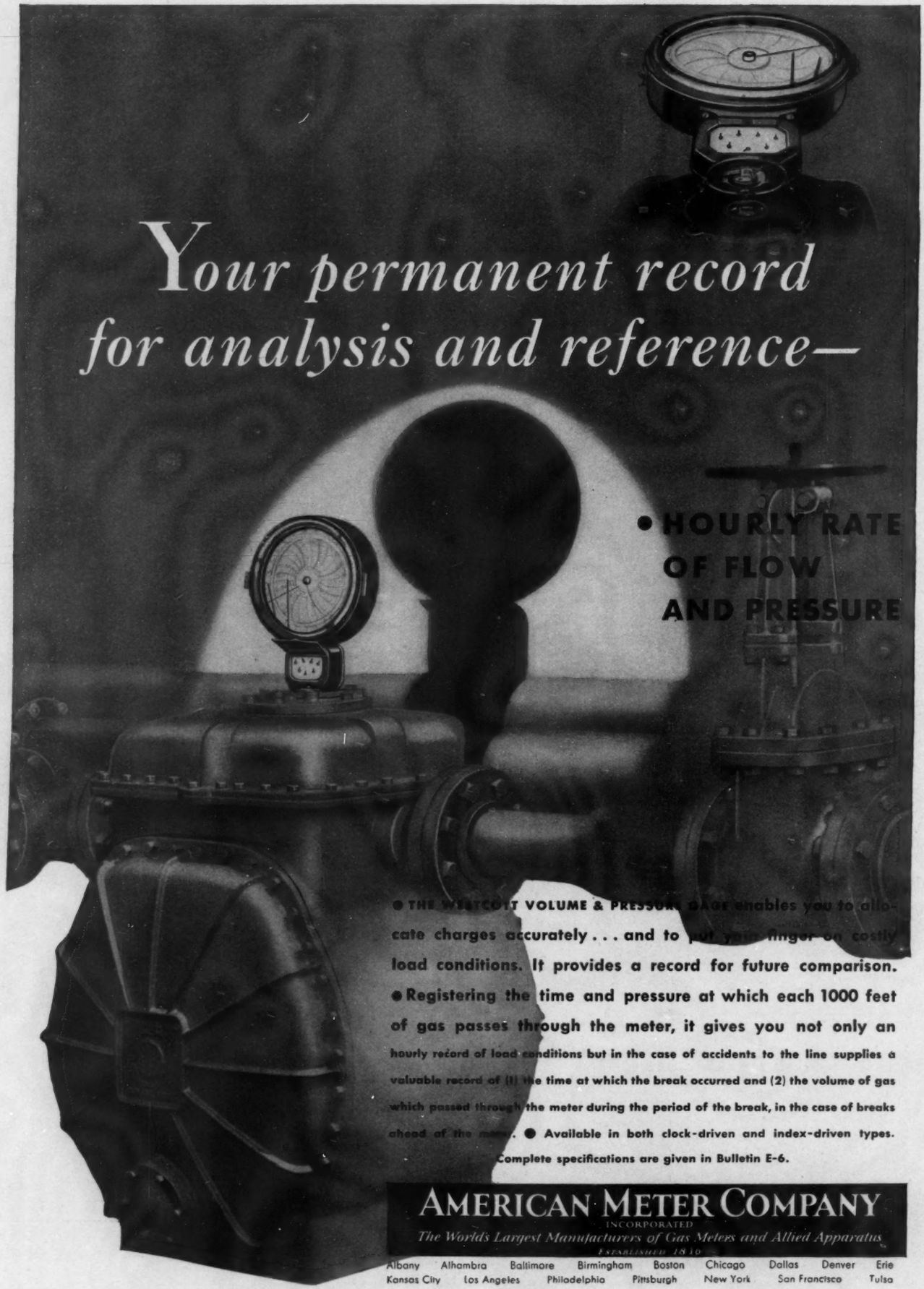
Reproduction of the micrograph above shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent they give Barrett Pipe Enamels unusual toughness and resistance to soil stresses.

For pipe of large diameter, The Barrett Company will furnish equipment required to revolve pipe and spread enamel.

Increase the useful life of underground pipe lines

The useful life of an underground pipe line is measured by its resistance to corrosion. When soil acids, moisture and stray electrical currents are definitely and continuously kept from contact with the pipe metal, corrosion cannot occur. Barrett Pipe Line Enamels, when properly applied, provide efficient waterproofing and insulation against corrosion from outside sources. To provide a tough coating which is dielectric and which resists soil stresses is the purpose of these Barrett Enamels. For helpful cooperation in solving any problem of pipe line protection, consult with the Barrett technical staff.

THE BARRETT COMPANY, 40 RECTOR STREET, NEW YORK, N. Y.



Your permanent record for analysis and reference—

• HOURLY RATE OF FLOW AND PRESSURE

• THE WESTCOTT VOLUME & PRESSURE GAGE enables you to allocate charges accurately . . . and to put your finger on costly load conditions. It provides a record for future comparison. • Registering the time and pressure at which each 1000 feet of gas passes through the meter, it gives you not only an hourly record of load conditions but in the case of accidents to the line supplies a valuable record of (1) the time at which the break occurred and (2) the volume of gas which passed through the meter during the period of the break, in the case of breaks ahead of the meter. • Available in both clock-driven and index-driven types. Complete specifications are given in Bulletin E-6.

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INCORPORATED
The Worlds Largest Manufacturers of Gas Meters and Allied Apparatus
ESTABLISHED 1816

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297

April, 1935

WESTERN GAS

"Reg.U. S. Pat. Off."

Vol. XI, No. 4

A Monthly Journal of the Gas and Gas Appliance Industries in *Western America*

SELLING . . . *in the Face of Government-Sponsored Competition*

By W. W. WINTER

THERE is a common sense ring to this statement from Mr. Winter. As president of the Atlanta Gas Light Co. and vice-president and general manager of an affiliated group of properties in Alabama, Georgia and Florida, he knows the T.V.A. experiment at first hand. His message, prepared for the Dallas meeting of the Southern Gas Association and Southwestern Regional Gas Sales Conference, is a clarion call to gas men to do something beyond merely registering indignation at the government trend. T.V.A. has not changed matters in any basic way, says Mr. Winter; gas is still the superior fuel; private operation is still vastly superior to public; markets are ready at hand. There is encouragement in his viewpoint, but only for those who are ready to promote gas service for conditions as they now are.—Editor.

THE subject of "Selling in the face of Government sponsored competition," I am sure, has occupied the attention of gas company executives in this territory for the last year or two more than any other one.

How much of this attention has been constructive thought on the problems which are presented, along with earnest and honest efforts to find a way out, and how much of it has been a mixture of panic and self-pitying resentment, I am unable to say. But I am afraid a large part of it has amounted to nothing more effective than indignant criticism of the administration policy, and an ardent hope that somebody will do something about it.

What we want mostly—and it is human nature that we should—is that some miracle will cause the Government to withdraw from its utility program, abandon its plan, preferably apologizing to everybody concerned, so that we may slump back into our comfortable complacence, receiving applications for gas service and merchandise in a manner fitting our dignity.

The probability that the Government is going to do anything of the sort is, to say the least, extremely remote. Not only is the Government going to pursue the plan already under way, but there is every indication that these plans will be extended and broadened in their scope to a considerable extent before they are curtailed, if ever.

Last Fall I presented a paper on this subject before the American Gas Association. At that time I predicted that there would be an extension of the Tennessee Valley experiment in other fields as well. My predictions have come true so soon that it has rather surprised me even though I was confidently expecting it. Apparently almost unlimited monies are available not only for Government-sponsored projects like the T.V.A., but to states and municipalities who wish to try their hand at the utility business.

The answer is, that the idea has taken hold with the people, and until it is thoroughly tried out, nothing is going to stop it. I know of many who are clinging desperately to the idea that the whole thing is unconstitutional. With 20 amendments already to the Constitution as an object lesson, there is little consolation in that idea to me. It's too easy to change the constitution, and I fully believe, with the present temper of the people of this country, that if it is necessary to do so they will pass another amendment just for this purpose.

It may be worth-while and proper for the gas industry, together with the electric industry, to do whatever it can to combat the idea of the Government going in business in competition with us. But whether it is or not, such activities are a long way from solving our problems. I will venture this statement, that among all forces and interests which might be interested in fighting the Government's program along these lines, the very last people who might be expected to be effective are the electric and gas industry. Almost anybody else would have a better chance.

As far as the electric industry is concerned, instead of fighting the T.V.A. in our territory, they are doing quite the reverse. I can't tell you whether they are doing it happily or not, but in any case they are doing it, and doing it

rather effectually. Let me quote from a public address of a responsible official of one of the largest electric utilities in our territory on this point. He says this:

"Now I know just what many of you are saying, many of you are thinking—'this is another example of the advent of government in business.' I am not here to argue that; I am not going to argue it. This is not a debate. I am here to merely tell you that, insofar as the Corporation is concerned, we have gone into the thing most enthusiastically. We have looked it up and down and reviewed it backwards and forwards. We have had the best brains at our command to think the thing through, and we have come to the conclusion, regardless of the debate over the abstract features of it, that it is the finest thing that we can do to go along with this thing just one hundred per cent plus; that it offers to us, in the light of the present day conditions, and in the light of the eternal, never ending agitation by local authorities for rate reductions, without regard to costs, the only sensible outlet. Frankly, we see a better company, a more profitable company, a happier company and more contented customer group as a result of the E. H. F. A. than we could ever have achieved by any means at our command."

That is the end of the quotation, but it isn't the end of the story. The rest of the story is that this company is now spending $850,000 a year in additional man power and advertising, not in fighting the T.V.A. but in cooperating with it. And I need not tell you that money is being spent to get our customers away from us in the gas industry and to get as customers the great mass of people who are not now customers of either us, or the electric companies.

INDIGNATION NO REMEDY

Now, there is the situation. And it is up to us to find the solution, as far as we are concerned. I can get as indignant as anybody over the fact that our companies are going to be taxed to build and support competitive governmental services. I can give just as long and complete a list of the injustices brought about by it to us as anybody. But if that is all I do about it, our companies are in for some rough sledding. Because that isn't the answer. Nobody is going to buy any more gas from us either because we are indignant, or because we are suffering from an unjust situation. We may get some sympathy, although that is doubtful, but it will not show up on the balance sheet.

I hope no one will think I am preaching, or being critical. Nor am I prepared to make recommendations which will solve all our problems. But I think that the time has come when we in the gas industry had better face some facts —or at least ask ourselves some questions that may prove embarrassing to us.

Isn't there a pretty strong probability that during the hundred years in which the gas industry has had an important place in American business, that we have become a little complacent?

We have all been subject to a tremendous amount of regulation by national, state and municipal authorities. This regulation has been on the basis that we are a monopoly, that as public utilities we are accorded certain rights not accorded other business, and that the public we serve therefore should be protected from any disposition on our part to impose upon them. Properly carried out, this is entirely right, and should be a protection, in a measure, both to us and to the public.

But this peculiar status among businesses may have given us the idea that regulation has the power to render us immune from the economic laws that govern business generally. Because we are classed technically as a monopoly, and regulated as such, we may have overlooked the stern fact that our business is in fact highly competitive. And as such, no amount of regulation, and no amount of protection that any regulating body might accord us can protect us from the hazards incident to any competitive business.

This is not a new fact. The advent of the T.V.A. hasn't changed matters basically at all. It has merely brought us face to face with facts that have always existed.

I don't for a minute deny that we have certain constitutional rights, that we should be free from destructive competition, or that we should be protected from the confiscation of our properties by unjust rates or regulations. And I would be the last to say that the Government is exercising a proper function when it enters private business of any sort in competition with the taxpayers who themselves are trying to make a living over and above their taxes.

But the fact that we are inclined to get panicky and desperate when the conditions which we have been accustomed to are disturbed, it seems to me, argues that we have not given enough consideration to the natural strength of our position, in the face of any sort of competition. We haven't the self confidence that we ought to have, and we don't believe in our own business as much as we should.

And I am afraid that what we fear is not destructive Government competition, but that this competition will force us to get out of our comfortable seats, and work with the ingenuity and earnestness that other competitive non-utility business men have always been accustomed to work.

I say this to you without hesitation. If we are willing to get down to work, rely on ourselves alone, quit depending on the government or anybody else to protect us, apply the same business rules to ourselves that other businesses have always had to apply or go out of business, cut loose from the idea that because we are utilities there is something sacred about us and our profits, we need not fear all the competition that the Government is liable to offer—or that anybody else may have to offer.

LET'S TAKE STOCK

Let's take stock, on that basis, and see where we stand.

A Product: In the first place we have a product, either in manufactured or natural gas that is immeasurably superior in its field to anything that private competitors have ever offered, or in the light of our knowledge today that it is probable anyone will ever offer.

Suppose that the Government agencies are able to put into every one of the cities in which we operate, electric current as cheap or cheaper than gas for cooking, water heating, and even space heating. Gas would still be superior for these services, and only the proper effort would be necessary to sell gas instead of electric current for them. Indeed for the past 15 years the position has been reversed. Gas has been cheaper by far than electricity, but the electric companies haven't gone out of business, or exactly languished. They have made tremendous gains, and nearly all of the operating companies have prospered, selling an inferior heating service at a very much higher price.

A Superior Service: And if there were no other advantage that we could depend upon, the matter of service alone would be sufficient. We have all dealt with Government, municipal and state agencies. We all know the contrast between the service to, and consideration of the customer in a Government agency and in even the average private business. Given just approximately an even break in the matter of price, there is no business in the country which needs to be afraid of competition with any Government agency.

Here is an exaggerated example of what I mean. The other day a small city in Mississippi completed arrangements with the T.V.A. for its electric current, complying with the T.V.A. schedule of rates. Immediately a notice was printed in the local paper that in the future bills would not be sent out but that each customer must come to the city hall each month promptly, find out how much he owed and pay the bill. This may not be typical of the entire T.V.A. operation. I dare say it is not. But it

(Continued on Page 48)

"Every Employee a Salesman . . . and Paid for It"

RESULTS: 389 Per Cent Gain in Southern Union Appliance Sales

By C. H. ZACHRY *Vice-President Southern Union Gas Company*

"EVERY Employee a Salesman for His Company" was the slogan in the two sales contests and new business campaigns conducted by companies affiliated with the Southern Union Gas Co., Dallas, Texas during the last 5½ months of 1934; and "Every one to be paid in proportion to results obtained" was the reward promised by the company.

C. H. Zachry

While as a result of the first contest, which lasted 90 days, appliance sales were increased 328 per cent over the previous year, and 933 new meters were installed, the principal result accomplished by these sales programs from the standpoint of the company was the development of an aggressive salesmanship throughout the entire organization, and the whole set-up of the sales contests was predicated upon the idea of building up such a spirit among the rank and file of the organization.

Prizes were offered only to those employees whose regular duties did not involve selling. However willing and anxious he may be to sell, not everyone has that peculiar ability to close out a sale and get the "name on the w. k. dotted line." With this idea in mind, a plan was developed which provided that the awards would be based upon the prospective customer contacts made by each employee, rather than upon the sales, as such, made by him. In other words, those eligible for prizes were service men, office girls, collectors, main line employees, maintenance men, et cetera. No prizes were given to salesmen nor district managers.

Awards were made on the basis of total points received by the individual employee. Points were awarded to the employees who secured and personally contacted prospects resulting in sales, whether or not the employee making the contact actually closed the sale. As soon as a contact was made, the employee would make out a prospect card, giving all pertinent information concerning the prospect, his possible requirements, etc. This prospect card was then either turned over to the salesman, district manager or perhaps the employee who made the contact might himself close the sale. In any event, his points are received on the basis of the successful contact, regardless of who actually closes the sale.

In case of any dispute in regard to credits for points or other matters, final decision rests with the district managers.

Gas consumption of the appliance sold was the principal consideration in arriving at the number of points allowed for each type of appliance. The following schedule was finally determined upon as a basis for awarding points:

	Points
New Meters	10
Reconnected Meters (after 6 months)	6
Unit Heaters, Central Furnaces, and Conversion Burners	4
Water Heaters, Circulators, and Floor Furnaces and Ranges	3
Gas Refrigerators, Space Heaters	2

A complete record was kept of all contacts made by each employee during the contests. However, points were given only for contacts which ultimately resulted in sales.

Before the campaigns were started, a complete survey and house-to-house canvass were made of every gas user and non-user of gas in each town and all pertinent information secured. In this way, at the beginning of the campaign complete information concerning all prospective customers was available to the employees. This was extremely useful in immediately finding and contacting prospects who were interested in gas or appliances. This survey was a very important factor in the success of the sales efforts. In passing, it might be added that the data were made available to all interested appliance dealers in each district and were very profitably made use of by several such dealers.

The survey was generally made by the regular company employees, and in all cases under their direct supervision. Most of the towns served by the Southern Union system range in size from 1,000 to 5,000 population and in several instances in making the surveys the services of local women were utilized. In all such cases only housewives of some local prominence were employed. After receiving certain general information regarding the local gas company and also specific instructions concerning the making of the survey itself, this method of conducting the canvass was quite successful, both as to the data secured and from a public relations standpoint.

Concurrent with the beginning of the July sales campaign, the "Southern Union News," the house news-magazine, was launched. This little paper, which carried all the current news of the campaign together with other news concerning the activities of the employees, was made up and mimeographed in the office of the company weekly, and was distributed to all the employees. It was a very vital assistance in maintaining interest and enthusiasm during the contests.

Practically no extra newspaper advertising was done during these sales campaigns and no extra salesmen were employed except in communities where no salesman had previously been employed. Salesmen are on a strictly commission basis with a drawing account. Most organizations which have salesmen on a commission basis find that there is some

(Continued on Page 52)

A LONG-TERM SALES PLAN FOR RANGES AND WATER HEATERS

By GEORGE H. FINLEY
Editor, Western Gas

DEALER CONTRACTS ACCEPTED BY THREE GAS COMPANIES IN LOS ANGELES AREA

MAPPING out a plan of campaign upon which the selling efforts of dealers and gas companies will be focused for many months to come, the three companies headquartering in Los Angeles have embarked upon a long-term sales drive on qualified gas ranges and automatic water heaters. The plan took effect on March 25, in all territory served by Los Angeles Gas and Electric Corp., Southern California Gas Co. and Southern Counties Gas Co.

Dealer contracts running as long as 5 years are being accepted, without financial recourse upon the dealers. The contracts are discounted on a scale later described, and collections are made by the gas companies.

LONG-TERM PRECEDENTS

Company executives directing the three-company effort point to several influences which have combined to give long term inducements a special appeal in present selling of domestic gas equipment. Among them are (1) the National Housing Act which features 5-year financing on fixed home improvements, including permanently installed appliances; (2) the TVA appliance sales plan (with its long-term, small monthly payment features) and the wide publicity which has brought it to general notice; (3) various types of appliance rental and rental-sale plans now in effect in many sections on ranges and water heaters.

With such considerations as the above in mind the plan described below was set up. While it of course was drawn to suit special conditions in the southern California area served by the three companies, it is a comprehensive program, thoroughly integrating efforts of dealers and utilities; because it has many elements of general interest, at a time when all companies are giving thought to long-term selling, its details are presented at some length later in this article.

By way of introduction it should be pointed out that a similar long-term sales plan for ranges only, was instituted in May of last year in the Glendale-Burbank area, served by Southern California Gas Co. Gas range sales by dealers showed notable increases with this plan in effect, and experience in this area served to indicate the soundness of long-term selling for southern California conditions. While some details differ in the present plan, the Glendale-Burbank offer was much the same fundamentally, as it included the 5-year terms, a $5 down payment (plus sales tax) and monthly payments of $1.50.

ESSENCE OF PLAN

In offering to accept dealer contracts for terms as long as 5 years the three companies set up these principal requirements:

1. Appliances sold must have A.G.A. approval (at time of sale) and meet certain minimum price and other qualifications.

2. Dealers must hold membership in one of a list of several recognized trade associations.

3. Dealers must file a letter of registration setting forth their intention to participate and their trade association membership referred to above.

As will be noted in the detailed plan published below, the carrying charge structure is built around a 6 per cent flat annual charge plus a monthly charge which decreases as the initial balance increases. This additional charge disappears entirely when the balance is $190 or more. It will also be noted that the discount on unpaid balances is graduated in proportion to the length of the contract, which will have the effect of encouraging shorter terms.

The plan proceeds to set up requirements for adequate installations, for repossessions through the dealers, servicing and replacement of parts, etc.

Manufacturers were given details of the campaign a month ahead of the starting dates, to allow time for getting stocks in order and encouraging participation of their respective dealers.

TERMS AND CONDITIONS

The following outline gives in detail the terms and conditions under which the three gas companies are agreeing to purchase dealer sales contracts:

(1) In order to participate in this program the Dealer must be a member of any of the following trade associations:

(a) Southern California Retail Hardware Association.

(b) Southern California Retail Furniture Association.

(c) Master Plumbers Association of Southern California.

(d) Los Angeles Merchant Plumbers Association.

(e) Los Angeles Better Business Bureau.

(f) Los Angeles Retail Merchants Credit Association.

(g) Manufacturers' Section, Pacific Coast Gas Association.

(h) .....

(Any accredited local trade or other merchants organization now in existence acceptable to the gas company upon whose lines Dealer installations of gas appliances are proposed.)

(2) Enclosed "Letter of Registration" is to be accurately and completely filled out and forwarded to the gas company upon whose lines Dealer installations of gas appliances are proposed.

(3 Contracts must be executed upon approved forms furnished by the Gas Companies and must be completely and properly filled out.

(4) Contracts must conform to the following terms:

Down Payment—$5.00 or more, exclusive of trade-in allowance and sales tax.

Carrying Charge—In accordance with the following schedule:

Balance			Rate
$ 40—	$ 49.99	6% flat per annum plus	$.15 per month
50—	59.99	6% flat per annum plus	.14 per month
60—	69.99	6% flat per annum plus	.13 per month
70—	79.99	6% flat per annum plus	.12 per month
80—	89.99	6% flat per annum plus	.11 per month
90—	99.99	6% flat per annum plus	.10 per month
100—	109.99	6% flat per annum plus	.09 per month
110—	119.99	6% flat per annum plus	.08 per month
120—	129.99	6% flat per annum plus	.07 per month
130—	139.99	6% flat per annum plus	.06 per month
140—	149.99	6% flat per annum plus	.05 per month
150—	159.99	6% flat per annum plus	.04 per month
160—	169.99	6% flat per annum plus	.03 per month
170—	179.99	6% flat per annum plus	.02 per month
180—	189.99	6% flat per annum plus	.01 per month
190—and up		6% flat per annum.	

SCHEDULE OF MONTHLY PAYMENTS AND AMOUNT OF CONTRACT

Unpaid Balance	12 Months		18 Months		24 Months		30 Months		33 Months		36 Months		39 Months		42 Months		45 Months		48 Months		51 Months		54 Months		57 Months		60 Months	
Unpaid Balance	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract	Monthly Payments	Amount of Contract
$ 1	$ .09	$1.06	$ .06	$1.09	$ .05	$1.12	$ .04	$1.15	$ .04	$1.17	$ .03	$1.18	$ .03	$1.20	$ .03	$1.21	$ .03	$1.23	$ .03	$1.24	$ .02	$1.26	$ .02	$1.27	$ .02	$1.29	$ .02	$1.30
2	.18	2.12	.12	2.18	.09	2.24	.08	2.30	.07	2.33	.07	2.36	.06	2.39	.06	2.42	.05	2.46	.05	2.51	.05	2.53	.05	2.54	.03	2.57	.04	2.60
3	.27	3.18	.18	3.27	.14	3.36	.11	3.45	.11	3.50	.10	3.54	.09	3.59	.09	3.63	.08	3.68	.08	3.72	.07	3.77	.07	3.81	.07	3.86	.06	3.90
4	.35	4.24	.24	4.36	.19	4.48	.15	4.60	.14	4.66	.13	4.72	.12	4.78	.12	4.84	.11	4.90	.10	4.96	.10	5.02	.09	5.08	.09	5.14	.09	5.20
5	.44	5.30	.30	5.45	.23	5.60	.19	5.75	.18	5.83	.16	5.90	.15	5.98	.14	6.06	.14	6.13	.13	6.20	.12	6.32	.12	6.35	.11	6.43	.11	6.50
6	.53	6.36	.36	6.54	.28	6.72	.23	6.90	.21	6.99	.20	7.08	.18	7.17	.17	7.26	.16	7.35	.15	7.44	.15	7.53	.14	7.62	.13	7.72	.13	7.80
7	.62	7.42	.42	7.63	.33	7.84	.27	8.05	.25	8.16	.23	8.26	.21	8.37	.20	8.47	.19	8.58	.18	8.68	.17	8.79	.16	8.89	.16	9.00	.15	9.10
8	.71	8.48	.48	8.72	.37	8.96	.31	9.20	.28	9.32	.26	9.44	.25	9.56	.23	9.68	.22	9.80	.21	9.92	.20	10.04	.19	10.16	.18	10.28	.17	10.40
9	.80	9.54	.54	9.81	.42	10.08	.34	10.35	.32	10.49	.29	10.63	.28	10.76	.26	10.89	.25	11.03	.23	11.16	.22	11.30	.21	11.43	.20	11.57	.19	11.70
$40	$3.68	$44.20	$2.57	$46.30	$2.02	$48.40	$1.68	$50.50	$1.56	$51.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	4.56	54.68	3.17	57.02	2.47	59.36	2.06	61.70	1.91	62.87	$1.78	$64.04	$1.67	$65.21	$1.58	$66.38	$1.50	$67.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	5.43	65.16	3.76	67.74	2.93	70.32	2.43	72.90	2.25	74.19	2.10	75.48	1.97	76.77	1.86	78.06	1.76	79.35	$1.68	$80.64	$1.61	$81.93	$1.54	$83.22	.....	.....	.....	.....
70	6.30	75.64	4.36	78.46	3.39	81.28	2.80	84.10	2.59	85.51	2.41	86.92	2.26	88.33	2.14	89.74	2.03	91.15	1.93	92.56	1.84	93.97	1.77	95.38	$1.70	$96.79	$1.64	$98.20
80	7.18	86.12	4.95	89.18	3.84	92.24	3.18	95.30	2.93	96.83	2.73	98.36	2.56	99.89	2.41	101.42	2.29	102.95	2.18	104.48	2.08	106.01	1.99	107.54	1.91	109.07	1.84	110.60
90	8.05	96.60	5.55	99.90	4.30	103.20	3.55	106.50	3.28	108.15	3.05	109.80	2.86	111.45	2.69	113.10	2.55	114.75	2.42	116.40	2.31	118.05	2.22	119.70	2.13	121.35	2.05	123.00
100	8.92	107.08	6.15	110.62	4.76	114.16	3.92	117.70	3.62	119.47	3.37	121.24	3.15	123.01	2.97	124.78	2.81	126.55	2.67	128.32	2.55	130.09	2.44	131.86	2.34	133.63	2.26	135.40
110	9.80	117.56	6.74	121.34	5.21	125.12	4.30	128.90	3.96	130.79	3.69	132.68	3.45	134.57	3.25	136.46	3.07	138.35	2.92	140.24	2.79	142.13	2.67	144.02	2.56	145.91	2.46	147.80
120	10.67	128.04	7.34	132.06	5.67	136.08	4.67	140.10	4.31	142.11	4.00	144.12	3.75	146.13	3.53	148.14	3.34	150.15	3.17	152.16	3.02	154.17	2.89	156.18	2.78	158.19	2.67	160.20
130	11.54	138.52	7.93	142.78	6.13	147.04	5.04	151.30	4.65	153.43	4.32	155.56	4.04	157.69	3.81	159.82	3.60	161.95	3.42	164.08	3.26	166.21	3.12	168.34	2.99	170.47	2.88	172.60
140	12.42	149.00	8.53	153.50	6.58	158.00	5.42	162.50	5.00	164.75	4.64	167.00	4.34	169.25	4.08	171.50	3.86	173.75	3.67	176.00	3.50	178.25	3.35	180.50	3.21	182.75	3.08	185.00
150	13.29	159.48	9.12	164.22	7.04	168.96	5.79	173.70	5.34	176.07	4.96	178.44	4.64	180.81	4.36	183.18	4.12	185.55	3.91	187.92	3.73	190.29	3.57	192.66	3.42	195.03	3.29	197.40
160	14.16	169.96	9.72	174.94	7.50	179.92	6.16	184.90	5.68	187.39	5.27	189.88	4.93	192.37	4.64	194.86	4.39	197.35	4.16	199.84	3.97	202.33	3.79	204.82	3.64	209.31	3.50	209.80
170	15.04	180.44	10.31	185.66	7.95	190.88	6.54	196.10	6.02	198.71	5.59	201.32	5.23	203.93	4.92	206.54	4.65	209.15	4.41	211.76	4.20	214.37	4.02	216.98	3.85	219.59	3.70	222.20
180	15.91	190.92	10.91	196.38	8.41	201.84	6.91	207.30	6.37	210.03	5.91	212.76	5.53	215.49	5.20	218.22	4.91	220.95	4.66	223.68	4.44	226.41	4.24	229.14	4.07	231.87	3.91	234.60
190	16.78	201.40	11.51	207.10	8.87	212.80	7.28	218.50	6.71	221.35	6.23	224.20	5.82	227.05	5.47	229.90	5.17	232.75	4.91	235.60	4.68	238.45	4.47	241.30	4.28	244.15	4.12	247.00
200	17.67	212.00	12.11	218.00	9.33	224.00	7.67	230.00	7.06	233.00	6.56	236.00	6.13	239.00	5.76	242.00	5.44	245.00	5.17	248.00	4.92	251.00	4.70	254.00	4.51	257.00	4.33	260.00
210	18.55	222.60	12.72	228.90	9.80	235.20	8.05	241.50	7.41	244.65	6.88	247.80	6.43	250.95	6.05	254.10	5.72	257.25	5.42	260.40	5.17	263.55	4.94	266.70	4.73	269.85	4.55	273.00
220	19.43	233.20	13.32	239.80	10.27	246.40	8.43	253.00	7.77	256.30	7.21	259.60	6.74	262.90	6.34	266.20	5.99	269.50	5.68	272.80	5.41	276.10	5.17	279.40	4.96	282.70	4.77	286.00
230	20.32	243.80	13.93	250.70	10.73	257.60	8.82	264.50	8.12	267.95	7.54	271.40	7.05	274.85	6.63	278.30	6.26	281.75	5.94	285.20	5.66	288.65	5.41	292.10	5.19	295.55	4.98	299.00
240	21.20	254.40	14.53	261.60	11.20	268.80	9.20	276.00	8.47	279.60	7.87	283.20	7.35	286.80	6.91	290.40	6.53	294.00	6.20	297.60	5.91	301.20	5.64	304.80	5.41	308.40	5.20	312.00
250	22.08	265.00	15.14	272.50	11.67	280.00	9.58	287.50	8.83	291.25	8.19	295.00	7.66	298.75	7.20	302.50	6.81	306.25	6.46	310.00	6.15	313.75	5.88	317.50	5.64	321.25	5.42	325.00
260	22.97	275.60	15.74	283.40	12.13	291.20	9.97	299.00	9.18	302.90	8.52	306.80	7.97	310.70	7.49	314.60	7.08	318.50	6.72	322.40	6.40	326.30	6.11	330.20	5.86	334.10	5.63	338.00
270	23.85	286.20	16.35	294.30	12.60	302.40	10.35	310.50	9.53	314.55	8.85	318.60	8.27	322.65	7.78	326.70	7.35	330.75	6.97	334.80	6.65	338.85	6.35	342.90	6.09	346.95	5.84	351.00
280	24.73	296.80	16.96	305.20	13.07	313.60	10.73	322.00	9.88	326.20	9.18	330.40	8.58	334.60	8.07	338.80	7.62	343.00	7.23	347.20	6.89	351.40	6.59	355.60	6.31	359.80	6.07	364.00
290	25.62	307.40	17.56	316.10	13.53	324.80	11.12	333.50	10.24	337.85	9.51	342.20	8.89	346.55	8.35	350.90	7.89	355.25	7.49	359.60	7.14	363.95	6.82	368.30	6.54	372.65	6.28	377.00
300	26.50	318.00	18.17	327.00	14.00	336.00	11.50	345.00	10.59	349.50	9.85	354.00	9.19	358.50	8.64	363.00	8.17	367.50	7.75	372.00	7.38	376.50	7.06	381.00	6.76	385.50	6.50	390.00
310	27.38	328.60	18.77	337.90	14.47	347.20	11.88	356.50	10.94	361.15	10.16	365.80	9.50	370.45	8.93	375.10	8.44	379.75	8.01	384.40	7.63	389.05	7.29	393.70	6.99	398.35	6.72	403.00
320	29.27	339.20	19.38	348.80	14.93	358.40	12.27	368.00	11.30	372.80	10.49	377.60	9.81	382.40	9.22	387.20	8.71	392.00	8.27	396.80	7.87	401.60	7.53	406.40	7.21	411.20	6.93	416.00
330	29.15	349.80	19.98	359.70	15.40	369.60	12.65	379.50	11.65	384.45	10.82	389.40	10.11	394.35	9.51	399.30	8.98	404.25	8.52	409.20	8.12	414.15	7.76	419.10	7.44	424.05	7.15	429.00
340	30.03	360.40	20.59	370.60	15.87	380.80	13.03	391.00	12.00	396.10	11.14	401.20	10.42	406.30	9.80	411.40	9.24	416.50	8.78	421.60	8.37	426.70	8.00	431.80	7.66	436.90	7.37	442.00
350	30.92	371.00	21.19	381.50	16.33	392.00	13.42	402.50	12.36	407.75	11.47	413.00	10.72	418.25	10.08	423.50	9.53	428.75	9.04	434.00	8.61	439.25	8.23	444.50	7.89	449.75	7.58	455.00
360	31.80	381.60	21.80	392.40	16.80	403.20	13.80	414.00	12.71	419.40	11.80	424.80	11.03	430.20	10.37	435.60	9.80	441.00	9.30	446.40	8.86	451.80	8.47	457.20	8.12	462.60	7.80	468.00
370	32.68	392.20	22.41	403.30	17.27	414.40	14.18	425.50	13.06	431.05	12.13	436.60	11.34	442.15	10.66	447.70	10.07	453.25	9.56	458.80	9.10	464.35	8.70	469.90	8.34	475.45	8.02	481.00
380	33.57	402.80	23.01	414.20	17.73	425.60	14.57	437.00	13.42	442.70	12.46	448.40	11.64	454.10	10.95	459.80	10.34	465.50	9.82	471.20	9.35	476.90	8.94	482.60	8.57	488.30	8.24	494.00
390	34.45	413.40	23.62	425.10	18.20	436.80	14.96	448.50	13.77	454.35	12.78	460.20	11.95	466.05	11.24	471.90	10.62	477.75	10.07	483.60	9.60	489.45	9.17	495.30	8.79	501.15	8.45	507.00
400	35.33	424.00	24.22	436.00	18.67	448.00	15.33	460.00	14.12	466.00	13.11	472.00	12.26	478.00	11.52	484.00	10.89	490.00	10.33	496.00	9.84	502.00	9.41	508.00	9.02	514.00	8.67	520.00
410	36.22	434.60	24.83	446.90	19.13	459.20	15.72	471.50	14.47	477.65	13.44	483.80	12.56	489.95	11.81	496.10	11.16	502.25	10.59	508.40	10.09	514.55	9.64	520.70	9.24	526.85	8.88	533.00
420	37.10	445.20	25.43	457.80	19.60	470.40	16.10	483.00	14.82	489.30	13.77	495.60	12.87	501.90	12.09	508.20	11.43	514.50	10.85	520.80	10.34	527.10	9.87	533.40	9.47	539.70	9.10	546.00
430	37.98	455.80	26.04	468.70	20.07	481.60	16.48	494.50	15.18	500.95	14.09	507.40	13.18	513.85	12.39	520.30	11.71	526.75	11.11	533.20	10.58	539.65	10.11	546.10	9.69	552.55	9.32	559.00
440	38.87	466.40	26.64	479.60	20.53	492.80	16.87	506.00	15.53	512.60	14.42	519.20	13.48	525.80	12.68	532.40	11.98	539.00	11.37	545.60	10.83	552.20	10.35	558.80	9.92	565.40	9.53	572.00
450	39.75	477.00	27.25	490.50	21.00	504.00	17.25	517.50	15.89	524.25	14.75	531.00	13.79	537.75	12.96	544.50	12.25	551.25	11.62	558.00	11.07	564.75	10.58	571.50	10.14	578.25	9.75	585.00
460	40.63	487.60	27.86	501.40	21.47	515.20	17.63	529.00	16.24	535.90	15.08	542.80	14.09	549.70	13.25	556.60	12.52	563.50	11.88	570.40	11.32	577.30	10.82	584.20	10.37	591.10	9.97	598.00
470	41.52	498.20	28.46	512.30	21.93	526.40	18.02	540.50	16.59	547.55	15.41	554.60	14.40	561.65	13.54	568.70	12.79	575.75	12.14	582.80	11.57	589.85	11.05	596.90	10.60	603.95	10.18	611.00
480	42.40	508.80	29.07	523.20	22.40	537.60	18.40	552.00	16.95	559.20	15.73	566.40	14.71	573.60	13.83	580.80	13.07	588.00	12.40	595.20	11.81	602.40	11.29	609.60	10.82	616.80	10.40	624.00
490	43.28	519.40	29.67	534.10	22.87	548.80	18.78	563.50	17.30	570.85	16.06	578.20	15.01	585.55	14.12	592.90	13.34	600.25	12.66	607.60	12.06	614.95	11.52	622.30	11.05	629.65	10.62	637.00
500	44.17	530.00	30.28	545.00	23.33	560.00	19.17	575.00	17.65	582.50	16.39	590.00	15.32	597.50	14.40	605.00	13.61	612.50	12.92	620.00	12.30	627.50	11.76	635.00	11.27	642.50	10.83	650.00

To obtain the amount of the Contract and the Monthly Payments for an amount to be financed not shown in the table, such as $62 for 48 months, add the table amounts for $60 to the table amounts to $2, thus:

Table for 48 Months

Unpaid Balance	Monthly Payments	Amount of Contract
$60	$1.68	$80.64
2	.05	2.48
$62	$1.73	$83.12

Minimum Down Payment ... $5.00, not including Trade-in Allowance.
Minimum Monthly Payments ... $1.50
Minimum Carrying Charge of $1.00 on all accounts carried over 30 days.
Arrange Down Payment so that Unpaid Balance is an even dollar amount.
Carrying Charge is difference between final Amount of Contract and Unpaid Balance.

If purchaser desires to keep Monthly Payments at a minimum, make calculations as shown at the right:
Example: Unpaid balance of $62.00 on sale of Appliances on which maximum length of contract permitted is 60 Months.

Table for 57 Months

Unpaid Balance	Monthly Payments	Amount of Contract
$70	$1.70	$96.79
Less 8	.18	10.28
$62	$1.52	$86.51

Accounts paid in full within 30 days from date of contract to be considered as cash transactions and carrying charges to be refunded in full. A minimum carrying charge of $1.00 to be collected on all accounts carried over 30 days.

Time:

Ranges .....Up to 60 months
Water Heaters—
Automatic Storage with galvanized tank .....Up to 36 months
Automatic Storage with copper, Everdur or Monel tank carrying an unconditional 5-year tank guarantee by the manufacturer....Up to 60 months
Instantaneous .....Up to 60 months

Monthly payments (minimum) $1.50, including carrying charge.

No balance less than $40.00 will be financed under these terms.

(5) Contracts must cover the sale of new, A.G.A. approved appliances whose sales price is equal to or greater than those given below, and which meet the following requirements:

Ranges—$69.50, installed. Must be fully enameled, with insulated ovens, oven heat control and automatic top lighter.

Water Heaters—$50.00, installed (Where published regular retail *installed* price is quoted purchaser).

Water Heaters—$42.50 uninstalled (Where published regular retail uninstalled price is quoted purchaser).

Must be equipped with safety pilot, and installation must conform to all local regulations.

"A.G.A. Approved" will be construed to apply only to appliances which have received A.G.A. approval prior to installation.

A separate contract will be required for the sale of each appliance.

(6) Buyer's credit must be acceptable to the serving gas company.

(7) Installation must be properly made, must be on the lines of one of the three gas companies, must be for domestic use and must be approved by a representative of the serving company.

(8) Contracts will be accepted without financial recourse upon the Dealer, subject to the following discount:

Up to 12 months, inclusive.....1%
13 to 24 months.....2%
25 to 36 months.....3%
37 to 48 months.....3½%
49 to 60 months.....4%

(9) The Dealer will be required to render the usual service upon appliances covered by contracts assigned to the gas companies, and will assume all responsibility for the carrying out of the manufacturer's guarantee, replacement of parts, and other service problems.

(10) In the event of repossession and upon request by the financing gas company, the Dealer will be required to effect the recovery of the appliances and deliver them to the nearest company office or warehouse.

(11) Appliances must be installed in such a manner as to meet the following requirements:

(a) Gas stop-cocks, either iron or brass, must be installed ahead of the union at each appliance.

(b) Each appliance must have model, serial and identification numbers permanently attached.*

(c) All installations must be made with new pipe and fittings, either black or galvanized, but not both on any one installation.

(d) Each appliance having an electrical attachment must have a convenience outlet provided, within 6 feet of the appliance, and meet all local ordinance requirements.

(e) Dealers must leave appliances properly adjusted and instruct the user relative to their proper utilization.

(f) Each clock-controlled gas range must be provided with a clock of the proper cycle at the time of installation.

(12) Each Dealer will be provided copies of our "Gas Companies Cooperative Financing Plan-Rate Chart", as soon as they are available.

(13) Each Dealer participating in this program agrees to not advertise this plan in any way, before Thursday, March 21, 1935.

Each Dealer likewise agrees not to sell or install appliances on this plan before the effective date, March 25, 1935.

(14) Dealers must provide on each contract a complete, accurate and detailed description of the merchandise sold, including model, serial and identification numbers. Accessories such as clocks, lamps, toasters, etc., when included in the sale, should be so stated on the contract. Retail sales price of appliance shown on contract must not exceed the published retail price shown on current price schedule issued by manufacturer of appliance. This information is necessary to enable the serving gas company to make payments to Dealers without delay.

(15) Each Dealer will be provided within the near future with a complete set of con-

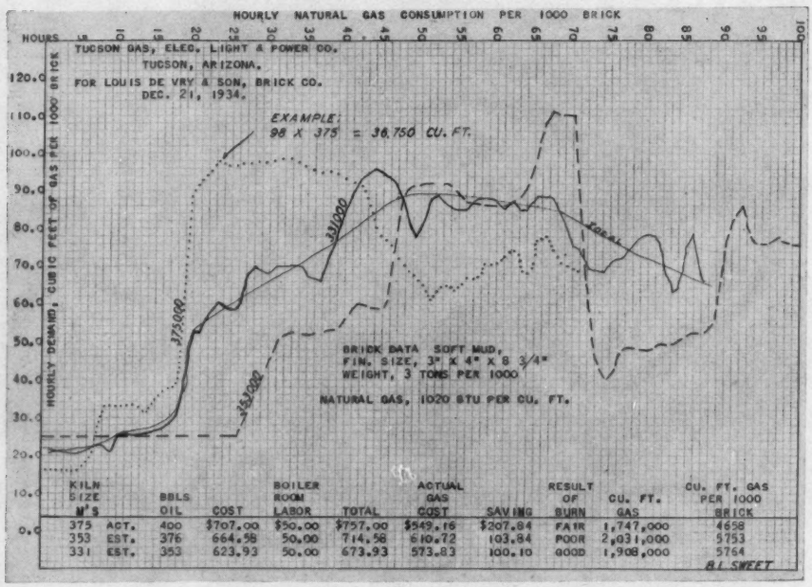
(Continued on Page 37)

*This provision will not become effective until July 1, 1935, to enable dealers to clear models now on their floors, in stock, etc.

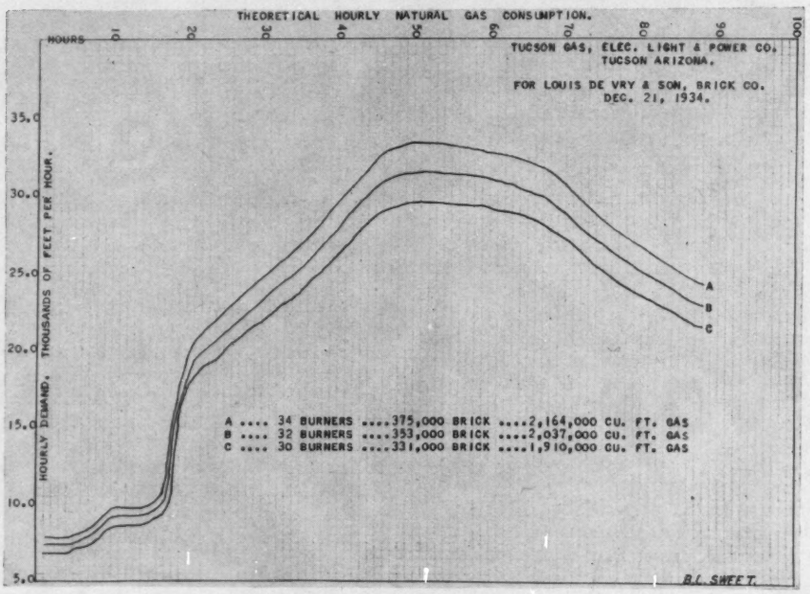
Ideal Gas Consumption Curves for Brick-Firing

By BRUCE L. SWEET

The Tucson Gas, Electric Light & Power Company, Tucson, Arizona


HOURLY NATURAL GAS CONSUMPTION PER 1000 BRICK
TUCSON GAS, ELEC. LIGHT & POWER CO.
TUCSON, ARIZONA.
FOR LOUIS DE VRY & SON, BRICK CO.
DEC. 21, 1934.
EXAMPLE:
98 X 375 = 36,750 CU. FT.
HOURLY DEMAND, CUBIC FEET OF GAS PER 1000 BRICK
HOURS
375,000
353,000
331,000
BRICK DATA SOFT MUD,
FIN. SIZE, 3" X 4" X 8 3/4"
WEIGHT, 3 TONS PER 1000
NATURAL GAS, 1020 BTU PER CU. FT.
B.L. SWEET

KILN SIZE M's		BBLS OIL	COST	BOILER ROOM LABOR	TOTAL	ACTUAL GAS COST	SAVING	RESULT OF BURN	CU. FT. GAS	CU. FT. GAS PER 1000 BRICK
375	ACT.	400	$707.00	$50.00	$757.00	$549.16	$207.84	FAIR	1,747,000	4658
353	EST.	376	664.56	50.00	714.56	610.72	103.84	POOR	2,031,000	5753
331	EST.	353	623.93	50.00	673.93	573.83	100.10	GOOD	1,908,000	5764


THEORETICAL HOURLY NATURAL GAS CONSUMPTION.
TUCSON GAS, ELEC. LIGHT & POWER CO.
TUCSON ARIZONA.
FOR LOUIS DE VRY & SON, BRICK CO.
DEC. 21, 1934.
HOURS
HOURLY DEMAND, THOUSANDS OF FEET PER HOUR.
A
B
C
A .... 34 BURNERS ....375,000 BRICK ....2,164,000 CU. FT. GAS
B .... 32 BURNERS ....353,000 BRICK ....2,037,000 CU. FT. GAS
C .... 30 BURNERS ....331,000 BRICK ....1,910,000 CU. FT. GAS
B.L. SWEET

WITH building on the increase in our district and the prospect of 8 million brick being burned within the next 12 months we have studied results from three separate kilns that were fired with natural gas, in order to recommend proper firing procedure to our customer.

Results of the three kilns burned are shown as fair, poor, and good. However, in all kilns burned the brick were used and no great loss was incurred by the brick company from the poor kiln.

During the firing of the kilns, designated as fair and good, old time employees of the brick company, considered as excellent firemen, were used. On the poor kiln firemen from an adjoining brick company were employed.

In comparing the first kiln of 375,000 brick with the firing of the good kiln of 331,000 brick it is apparent that on the first the heat was built up too quickly and that as long as the temperature at the top of the kiln was low it was possible to carry a heavy gas demand. As the heat neared the top, the absorption from the arch to the top was lessened and it became necessary to decrease the gas input to prevent the arches melting down. This carried the kiln to a low point on the 51st hour and again the heat had to be built up. Also, this kiln was fired 17 hours less than the other, using 1,106 cubic feet less gas per thousand brick. Part of this 1,106 cubic feet may be accounted for, due to this kiln being burned in the summer while the other was fired in the winter.

Comparing the 353,000 brick kiln against the good kiln of 331,000 brick the management of this brickyard decided, before the burn was started, to carry the water smoke period at a constant heat for 20 to 25 hours, after which a gradual build up would be made and carried out until the end of the burn. However, as previously stated, new firemen were employed on this job and during the absence of the superintendent the gas demand was raised exceedingly high between the 65th and 70th hour. This over-heated the arches to the point of melting down. The firemen became alarmed and cut the gas input too low. The study of all three kilns shows that once the heat is built too high and then turned down, invariably points lower than necessary are reached and the heat must again be built up. This kiln used 5,753 cubic feet of gas per thousand brick, with poor results as compared with the good kiln using 5,764 cubic feet of gas per thousand brick.

The good kiln of 331,000 brick was carried out on a firing procedure calling for a gradual increase of gas until a peak of 30,000 cubic feet per hour was reached, then held as near that as possible throughout the remainder of the burn. This curve of gas input is a decided improvement on the other two burns. However, there is an unnecessary amount of unevenness, as shown by the ideal curve we have drawn through this burn (See upper graph, above). We have calculated the amount of gas on the ideal curve and by carrying it one hour longer we have exactly the same gas input as on the actual burn.

Our suggestion for firing the next kiln of brick will be to figure out the gas input hour by hour as nearly as possible to the ideal curve. At the start the burners are pointed down at about a 45 degree angle, the flame hitting the

(Continued on Page 54)

Replacing Service Men with "Sales Mechanics"

to make the most of customer contacts

By C. A. RENZ

*Assistant Superintendent, Gas Distribution Department, Los Angeles Gas and Electric Corporation**

SERVICE men in the Los Angeles Gas and Electric Corp. Gas Distribution Department are responsible for a minimum of 500,000 customer contacts a year. This number does not include ineffective calls, such as wrong address, no one at home, gas closed on account of consumer moving, and the like.

The possibilities of utilizing this continually increasing number of personal consumer contacts has been recognized for some time. Approximately three years ago, spurred by local and national development in the direction of government-subsidized electric competition, and with continued inroads into our net income by increased city and state taxation, the Gas Distribution Department definitely decided to attempt to capitalize on the great number of service calls for the purpose of building consumer satisfaction with present equipment, or, if not, then carrying the message of the benefits of modern gas appliances. It was felt that if this message were carried properly through our service men, it would, without any doubt, keep our present load as well as build more.

To effectively prepare service men, normally accustomed to serve the consumer from a mechanical point of view, education programs were inaugurated. The Gas Distribution Department personnel meeting the public as service men was studied, and the qualifications of new employees or those transferred from other departments were more carefully analyzed, to obtain talent that could be rated, for want of a better classification, as "sales mechanics." Of the personnel meeting the public at the time of the inception of this program, approximately 60 per cent remain. The 40 per cent were delegated to other classes of work which did not obligate them to meet the public.

Our problem and objective was discussed from time to time with service men individually. It was pointed out that service requests are generally predicated on mechanical difficulties in the minds of the consumers, even though the actual dissatisfaction is prompted by other causes, such as inadequate or obsolete equipment and lack of understanding of the proper use of the installed appliance. It was pointed out that the consumer bought a commodity that actually could not be seen; that this commodity was measured through a cash register that was not understood, therefore, was under suspicion; that mechanical adjustments were a mystery as far as the average housewife was concerned. Unless the service man was qualified to discuss intelligently either the service rendered, the operation and performance of the appliances on the premises, or, if conditions warranted, the benefits to be obtained from equipment now available, his service call—from the viewpoint of obtaining the confidence of the consumer in the use of gas appliances which affects holding the present load and increasing the use of modern gas equipment—was a total loss. The service men were advised, when discussing appliances with consumers, to point out the ease of operation and the simplicity of adjustment procedure.

An analysis of actual sales resulting from the efforts of service men only during 1934 indicated that about $200,000 worth of modern gas equipment was placed on our lines. These results are tangible evidence of the value of service men in consumer contacts. This value is still latent to a certain extent, but can be developed by continual instruction programs to convert our mechanics to sales mechanics.

Operating practices in vogue for several years prior to the efforts of the Gas Distribution Department to meet changing conditions, have been rearranged in certain classes of work. For instance, the practice in the past, when changing old-age meters for routine tests, has been to consider it from a production basis only; namely, how many meters can a man bring in in a day? This number was usually between 20 and 30 meters. A study revealed that with 60 per cent of these calls made, the customer had had no contact, other than those of bill collectors, in a period of from one to seven years. It was decided to inspect the customer's appliances thoroughly and discuss with him the benefits of modern equipment. As a result, the production per man per day dropped from an average of 25 meters to approximately 10. A study of 4,000 old-age changes made under these conditions disclosed that 30 per cent of the appliances were in need of immediate attention, and possible replacement.

A year ago 50 men were given class instruction in cooking. It is really amazing to read the completed service orders issued by these men, wherein they state they demonstrated to customers how to place pans in the oven, how to use measuring cups, how to use certain condiments, etc., to avoid results which otherwise would have been attributed to the fuel or faulty operation of the oven.

During the past few weeks a novel experiment has been tried and proven quite successful. When a service man has occasion to service a radiant heater which is either obsolete or inadequate, he arranges to install a demonstration radiant heater of proper size for the customer. If the customer's interest is sufficiently aroused, he provides for permanent installation of the heater from the district dealer and arranges for billing through the gas company. Naturally, the above mentioned procedures increase the cost of service; however, the satisfactory results justify this added expense. It places new appliances on our lines and gives definite notice to our New Business Department that the service

(Continued on Page 54)

*Presented at the Spring Sales Conference, Pacific Coast Gas Association, Los Angeles, Calif., March 7-8, 1935.

The Peoples Gas SUGGESTION PLAN

how it works and what it accomplishes

By CRAIG ESPY

Mid-Western Manager
Western Gas

THE fundamentals of the successful Suggestion Plan of The Peoples Gas Light & Coke Co., that was inaugurated in 1924, with B. J. Mullaney, vice president of the company, as chairman and W. O. Hodgdon as secretary are embodied in an assertion—"There is a better way to do it"—a query—"Do what?"—and an answer—"Anything."

Executives of Peoples Gas interested in forming the plan also had in mind that such a program would develop initiative among the employees and encourage them to think while they worked, and at the same time prove practical in bringing into constant review the various procedures and routines of the company. It was felt that in this way improvements in working conditions and substantial savings in time, labor, material and money would be possible.

Just how well the program has worked out is attested by the fact that approximately 20 per cent of the number of suggestions filed annually are approved for monetary awards. From three to five is the average daily yield of suggestions. A total of 1,469 were received during 1934.

"Some of the suggestions are naturally trivial," states W. O. Hodgdon, "and some are duplicates, but many are also of very great value, like the one that, a few years ago, netted the suggester an award of $850."

The suggestion that drew this award pertained to a better method of filing ledger coupons for the 900,000 accounts handled by the company. When the suggestion was originally made it was not applicable. Later, due to a change in the bookkeeping system, the idea was brought into service. The originator of the suggestion was immediately paid $150 and when the suggestion had proved its worth over a year's period was given an additional award of $700.

While the system of awards is based on a minimum cash payment of $5, it is the hope of the committee that some day an employee will have a suggestion that will entitle him to as great an award as $1,000.

The Committee that passes on suggestions and establishes values is made up of some of the chief executives of the company. Executive cooperation and support is absolutely essential if a plan of this kind is to be productive of the best results, Mr. Hodgdon points out. Every suggestion is given an award—either a cash award, merit marks, or a letter of appreciation.

The Committee regards and analyzes each suggestion as liberally as possible, not only considering the merit of the suggestion, but seeking as well to credit the author with the idea back of the suggestion. It is always the aim of the committee to award the full value of the suggestion. In certain cases a preliminary award is made, later followed with a supplemental cash award (as in the case of the $850 award described above) after the suggestion proves itself in operation, and has been reviewed by the auditing department.

Three Types of Awards

Twenty-five dollars in crisp bills was paid out for the suggestion that now serves as the basis for the second of the three types of awards. When the original plan was conceived no provision was made for awards beyond those calling for cash and for a letter of recognition and appreciation. As a result of a "suggestion" the "Merit Award" is now in operation. Merit marks are given for suggestions that barely fall short of the standards set up for cash awards. When 10 merit marks are accumulated they have a cash value of $5. All suggestions given cash awards or merit marks are credited on the employment records of the individuals.

Superintendents, chief clerks, managers, foremen and higher executives and their assistants are not eligible to receive awards, since it is of course expected that they will make suggestions for the good of the company and for their departments in the ordinary course of duties.

One reason for the success of the plan operated by Peoples Gas is evident in the confidence with which employees view the whole plan. Employees constantly have in mind that prompt and careful action will be taken on every suggestion that they offer. The fact that suggestions are constantly needed and desired is also brought repeatedly to the attention of the employees through means of periodic bulletins issued by the secretary, and through news items and editorials appearing in the company paper.

Department heads, superintendents and foremen cooperate with the plan. In numerous instances executives of departments have put suggestions into operation even ahead of formal awards being made. Of course the award is assured when the idea is put into service.

Under the routine set up by the Suggestion Department, the author of a suggestion is never known until the award number is posted and the claimant sends in his coupon and name. The suggestion blank and accompanying coupon carry duplicate numbers, and the suggestion is filed under number only. The employee retains the coupon until the number is posted.

In conducting correspondence with the authors of suggestions every letter that W. O. Hodgdon sends out is personally dictated. All go fully into an explanation as to why the employee won or did not win an award, giving reasons why the suggestion was or was not accepted. By careful and considerate handling of this correspondence the employee that has failed to gain an award is encouraged to contribute other ideas.

The employee is not left in doubt as to where he can look for ideas. He is prompted to creative thinking by frequent publication of sources for acceptable ideas. Every "suggestion blank" carries a list of 22 active channels for constructive suggestions. Suggestion boxes filled with these blanks are conveniently located in every department of the company.

(Continued on Page 51)

Public Relations Audit

Gets Customer Reaction for P. G. and E.

By ROBT. L. ELTRINGHAM

*Pacific Gas and Electric Company**

THE general concept of good public relations is a strict adherence to those factors which build up public confidence, create a favorable attitude on the part of the customers toward the utility, and guarantee to the customers the maximum value in service at the lowest possible cost.

The factors which have been recognized by the public utility companies generally might be enumerated as follows:

1. That courtesy and consideration in dealing with the customers should be paramount. In recognition of this, the Pacific Gas and Electric Co. has during the past 18 months conducted "Contact Employee Training Courses" throughout the entire system of the company. The object of this was primarily to emphasize the necessity of giving absolute attention to matters of interest to the customer. During this training more than 2,000 employees took these courses.

2. That the best interests of their customers will be served by making available to them an adequate and uninterrupted supply of the commodity which the utilities have for sale. In an endeavor to carry out this policy Pacific Gas and Electric Co. has devoted a great deal of time to the inspection and servicing of the customers' electric and gas consuming devices. This has included adjustments, minor repairs, and, in many instances, actual replacement of parts. The physical department maintains a 24-hour service in order to assure uninterrupted supply.

3. That every effort should be made to promote a more general use of gas and electric appliances and devices to the ultimate and mutual benefit of the customers and the companies. This has stimulated a policy of close cooperation with dealers and merchants through advertising new uses for appliances which has resulted in increased distribution and wider application.

In order to determine the effectiveness of these policies the Pacific Gas and Electric Company during the past year has conducted what has been designated as a "Public Relations Audit"; the contention being that there was no more reason why an audit should not be made which, in its effect, would reach down and obtain for the company the general sentiment of its customers than that an audit should be made to determine whether the accounts of the company were being correctly kept or inventories properly indexed.

In selecting auditors it was necessary that the persons conducting this audit should be familiar with the policies, background and history of the company, types of commodities available in the various localities, rate schedules and methods of computations, billing periods, and general plan of servicing, together with a knowledge of department functions and department relationships.

The first step in the conduct of the audit was to determine how well we were rendering appliance service to our customers. In order to gain this information the auditors operating in a given division carefully surveyed complaint tags to ascertain whether the call for service had been complied with and to learn what character of service had actually been performed. This was, in effect, auditing complaint tags. The auditor then called the customer by telephone and made personal inquiry as to whether the service had been satisfactorily performed. If it was learned that the customer was not satisfied with the work performed by the service man, a second service tag was issued necessitating a second call. This tag was then similarly audited. At the time the telephone inquiry was made an interest was manifested by the auditor not only in the matter of proper adjustment of the appliance but to ascertain if the customer's dealings with other departments of the company were entirely satisfactory and, if not, to solicit his comments.

Field Audit

Upon completion of the audit of complaint tags, the auditors made calls upon a group of customers selected at random in various sections of the territory. These personal calls were particularly for the purpose of determining whether the service rendered by the company was satisfactory and whether the most cordial relation existed, and at the same time soliciting the customers' comments and requesting any suggestions that they might desire to make which tend toward the bettering of the company's service.

The meter readers' route books were used by the auditors in mapping their schedule of personal calls. This was of material assistance to them for the reason that in each instance it showed the name of the occupant at the particular address called upon. This obviated any embarrassment in requesting the name of the customer. Information dealing with regular monthly consumption was available on account of the presence of the route book which enabled the auditor to discuss more intelligently such matters as high bills and date of meter readings, etc.

A separate report was made by the auditors to the Bureau of Public Relations recording each complaint received and each comment made. The value of this report was to assist in following up the complaint, and a record of the comments was of particular value because in many instances it disclosed the sentiment of the customers toward the company.

Aside from the daily report, a progress report was made each day indicating the number of calls actually made, whether they were personal or by telephone, setting forth further the number of instances in which the customer was satisfied and those which registered any degree of dissatisfaction. Copies of both these reports were sent to the management officers of the company and also to the division managers in the particular districts in which the audit was being made.

It then became the duty of the respective divisions to make such further investigation of recorded complaints as was necessary to bring about a satisfactory adjustment. The procedure of the subsequent investigation was recorded on the back of each daily report form, and

(Continued on Page 47)

*Presented before the Pacific Coast Gas Association's 1934 annual convention.

Development of Municipal Ordinances Pertaining to the Gas Business

● E. R. THOMPSON, Boston Consolidated Gas Co.; addressing Operating Division, New England Gas Association—(Abstract by WESTERN GAS):

AMONG the earliest regulating gas company activities were those formulated in Boston in 1823, giving the Mayor and Alderman control over the health, safety and convenience of the inhabitants. In 1897, when domestic sales were vigorously promoted by the Boston gas company, regulations were passed licensing gas fitters and providing for inspection of gas fixtures and appliances. The following year a very complete set of house piping specifications was adopted.

In general, ordinances may be drawn up in (a) a specific manner containing all the desired requirements or prohibitions, or (b) in a form which delegates the authority to make regulations to some official or board such as the Board of Health or the City Building Department. In many instances, the form is a combination of both, which is probably the most satisfactory arrangement. Having at least part of the control vested in boards or other regulatory bodies provides opportunity for flexibility and rapid change with changing conditions, without necessity for actual repeal or reenactment with definite wording.

In some form or other, all ordinances include in varying degrees a part or all of the following features:

(a) The licensing of fitters and issuing of permits;

(b) The licensing of sellers of appliances;

(c) The prohibition of the sale and/or installation of unapproved appliances;

(d) The determination of approval of appliances;

(e) Detailed house piping specifications such as size of pipe, quality, method of installation, etc.;

(f) Particular methods of installing appliances and prohibitions as to location, etc.;

(g) Particular rules concerning location of meters and turning on of gas;

(h) Statement of the time the law is effective and penalty for violation;

(i) Machinery for inspection and enforcement.

Laws should be definite in stating the date effective and whether or not they are retroactive. Penalties for violation aid effectiveness, but of more importance are powers given to an appropriate official to inspect and draw up regulations as found necessary.

Ordinances throughout the United States vary widely in scope and strictness. Some are definite in detail and others leave the fine points to some official or board. For the most part, they indicate independent work by a great number of individual companies and people. Uniformity is lacking in many respects. An actual survey in New England shows that approximately 50 per cent of the communities have no laws at all, that 40 per cent have very meager laws, and that the remaining 10 per cent, comprising the larger cities, have what might be termed reasonably adequate regulations.

The consensus of legal opinion is that ordinances as thus far developed are of little aid to the public utilities in court proceedings. Decisions in an increasing percentage of cases are made upon intangible factors outside the scope of ordinances and the precedent is growing to impose greater liability upon the utility, to the point where the revision of state laws appears the only hope of arresting this tendency.

An examination of the situation throughout New England and the United States discloses a relatively uniform need for ordinances but a considerable lack of uniformity in the existing regulations; considering, however, those few communities where complete and strict ordinances have been developed, a rather striking similarity is observed. This strengthens the viewpoint that apparently local conditions have very little influence upon the difference in need for the general features considered in well prepared ordinances, because of the uniform uses of gas and the similarity of appliances in all communities.

Some companies, with good control of the local situation because of relatively static conditions, may be opposed or at least indifferent to new regulatory measures. Conditions are now changing rapidly, however, and there is always the possibility of unforeseen events such as localized natural disasters, unprecedented cold weather, etc., at which times adequate civic regulations would be of great assistance.

Manufacturers of appliances and other equipment have a distinct interest in ordinances and particularly in their uniformity. When different towns and cities demand different specifications for similar devices or equipment, they are put to additional trouble and expense in manufacturing; it is even possible for conflicting ordinances to permit certain usage in one locality and prohibit it in another.

The most important reason for sound ordinances, besides insuring high grade installation work and proper use of appliances, is to give the utility a ready means of refusing to become a party to undesirable practices that are constantly insisted upon by ignorant, careless or unscrupulous persons.

Considering the question of ordinances from several angles, there seems to be no good reason why all communities should not have complete and, for the most part, uniform regulations for the installation and use of gas equipment. The only danger lies in the detailed formation of the ordinances; extreme care must be exercised to exclude features that would prove detrimental. Apparently there is much to be gained and little to be lost; a set of well designed ordinances, conscientiously enforced, is good insurance for the further progress of the gas industry.

Effect of Soot on Heat Transmission in Boilers

● P. NICHOLLS and C. E. AUGUSTINE, Pittsburgh Experiment Station, U. S. Bureau of Mines; in U. S. Bureau of Mines Report of Investigations 3272, February 1935—(Abstract by WESTERN GAS):

A LAYER of soot on the heating surface of a boiler decreases efficiency because it increases resistance to the flow of heat, with the result that the heat transfer to the water is lower and the temperature of the flue gas higher than they would be if the surfaces remained clean. The percentage of reduction in heat transfer depends on the position and area of the sooted surfaces, the thickness of the soot, and the percentage of the total heat absorbed by those surfaces when clean; thus it will vary with the type of boiler and in particular with the ratio of the area of the convection heating surface to the total area.

Two boilers were tested, both of the round cast-iron type with three sections. The methods used were the same in both boilers.

The tests simulated a heat-transmission test in which hot gases of a definite weight per hour and a definite temperature were passed through the boiler; the heat transfer was determined from the

TABLE NO. 1—HEAT LOSS CAUSED BY SOOT EXPRESSED AS A PERCENTAGE OF THE HEAT MADE AVAILABLE BY THE BURNING OF THE FUEL.

	20-Inch Boiler		24-Inch Boiler	
Degree of Sooting	Test No.	Heat Loss Per Cent	Test No.	Heat Loss Per Cent
Clean	1	0	1 and 2	0
Slight (⅛ inch)	2	3.0	3	1.5
Medium (¼ inch)	3	4.9	4	4.2
Heavy	4	6.4	5	4.2
Heavy	5	5.7	6	4.7
Heavy	6	5.0	8	5.3
Heavy	7	6.6	....	....
Clean	8	0	7	0

heat delivered and from the temperature of the gases leaving the boiler.

This was accomplished by burning high temperature coke, supplying a definite total weight of air per hour, and continually adjusting the rates of primary and secondary air so that the CO_2 content of the flue gases was constant for 5 hours and was the same in successive tests.

In the first test the heating surfaces were thoroughly cleaned. The sooting was then accomplished as an independent operation by burning coal in the normal manner with natural draft. After a light sooting another test was made, after which the boiler was further sooted and again tested; this was repeated until no further increase in soot was possible. Finally the boiler was again cleaned and retested.

Table No. 1 summarizes the results of the tests; it shows the heat loss—that is, heat not absorbed by the boiler—caused by various degrees of sooting, expressed as a percentage of the heat made available to the boiler by the burning of the fuel.

The designations given for the degree of sooting are general because the thicknesses were not uniform over any one area and decreased along the path of the gases. Although no attempt is made to distinguish between the deposits designated as heavy, the quantity of soot was greater with successive sootings but mainly consisted of clogging of the passages.

The loss with both boilers increased with an increase in the quantity of soot. The loss with the 20-inch boiler was greater than with the 24-inch one; this is logical because the ratio of the area of the surface to the cross-section of the gas stream increases with a decrease in diameter.

The loss with the first thin layer of soot is greater than that with further increases in the quantity deposited. This may be due to the fact that the surfaces of the firepot were cleaned, and the layer of tar deposited on these may have decreased their ability to absorb the radiation from the fuel bed.

The maximum loss in any test was 6.6 per cent with the 20-inch and 5.3 per cent with the 24-inch boiler. The deposits in these tests were very heavy and more than would be tolerated in service.

Calculating Unit Heater Operating Costs

● B. A. JOHNSON, Public Service Co. of Northern Illinois, Chairman of Sub-Committee on "Commercial Heating With Unit Heaters"; in American Gas Association Interim Bulletin No. 16, entitled "What Are the Operating Costs on Unit Heaters?"—(Abstract by WESTERN GAS):

THE gas-fired unit heater is recognized by the gas industry as a space heating appliance having many advantages over present methods of heating commercial and industrial establishments and therefore a means of increasing gas sales in many gas companies. In addition to its advantages over other forms of heating, the unit heater may be looked upon as a step toward air conditioning by making users of it conscious of air circulation as an effective heating and cooling medium.

In obtaining this class of business the "cost factor" becomes a very important item. An estimate that is too low will eventually destroy customer confidence in the company and also in the equipment. An estimate that is too high will show up many good cases in an unfavorable light and make desirable jobs harder to sell.

In connection with the following study on estimating heating costs, some 30 installations were selected for examination because complete information was available on them as to temperatures maintained, heat losses, and also consumptions and methods of operation; a comparison was made of the results obtained in these cases with various methods of estimating now in use as well as with a simplified method which is developed below.

The first step in any heating survey involves the measuring of the building and calculation of its heat loss based on heat leakage factors for the various materials of construction and a design temperature. From this information is obtained a *B.t.u. Loss Per Hour,* which is the heat loss per hour of the space at design temperature conditions.

In sizing the equipment, usually enough capacity is provided to take care of the maximum heat loss. Unvented heaters are assumed to have 90 per cent efficiency and vented heaters 80 per cent efficiency. Where heat is supplied only during the day, usually an increase of 20 per cent over the heat loss is allowed in selecting the size of heater in order that the load may be picked up quickly. When heat is supplied only during a few days of the week, it is advisable to have heater capacity as much as 50 per cent in excess of the heat loss in order to take care of heating up the building.

Calculations necessary are:

B.t.u. Loss Per Degree Day:

This figure is a simple unit which can be used for all calculations regardless of temperatures carried and may be expressed as follows:

$$\text{B.t.u. Loss per degree day} = \frac{\text{B.t.u. Loss per hour} \times 24}{\text{Temperature difference at which B.t.u. loss was figured}}$$

B.t.u. Loss Per Season:

The B.t.u. loss per season for any installation is obtained as follows:

$$\text{B.t.u. Loss per season} = \text{B.t.u. loss per degree day} \times \text{Degree days}$$

Degree days to be used in the above calculations would be figured on the basis of the temperature carried and in the case of two temperatures, two separate calculations would have to be made involving each temperature and the number of degree days in the period as well as the percentage of time for each temperature.

In setting up a simplified method of making the above calculations certain variables that remain the same for all calculations have been combined; the necessity for using degree days for any other temperature than the standard 70° basis has also been eliminated.

Simplification No. 1:

$$\text{B.t.u. Loss per Degree Day per 1,000 B.t.u. Heat Loss} = 343$$

Simplification No. 2:

To eliminate the necessity of making two calculations for each job where two temperatures are carried, the following procedure can be followed:

Figure degree days for each temperature carried and from that data establish a ratio of heating requirements at that temperature to heating requirements at normal temperature by dividing the degree days by the normal.

Thus, instead of making two calculations requiring two sets of degree day figures, find the average temperature and determine the ratio or correction factor from a curve and the estimate becomes as simple as this:

$$\text{B.t.u. loss per season} = 343 \times \text{Degree days} \times \text{B.t.u. loss per hour in thousands} \times \text{Ratio}$$

Cubic feet of gas, or therms, or cost, can be calculated direct from the B.t.u. loss per season. Fig. 1 shows how these ratios are obtained for Chicago weather.

In this particular study three methods of estimating have been compared and the results analyzed. The methods used are described as follows:

Method No. 1

$$\text{Gas Consumption per season} = \frac{\text{Heat loss per hour} \times \text{Degree days} \times \text{Average degree hours}}{(\text{Temperature carried}—5°) \times \text{B.t.u. value of gas} \times \text{efficiency of unit}}$$

Degree Days are figured on basis of temperature carried less 5°.

Method No. 2

$$\text{Gas consumption per season} = \frac{\text{Heat loss at design temperature} \times \text{degree days design temperature} \times \text{Correction factor}}{\text{Design temperature} \times \text{B.t.u. value of gas} \times \text{Efficiency of unit}}$$

The correction factor is a number equivalent to 24 hours at design temperature.

Method No. 3 (Already developed)

$$\text{B.t.u. loss per season} = \frac{343 \times \text{Degree days} \times \text{B.t.u. loss per hour in thousands} \times \text{Ratio}}{}$$

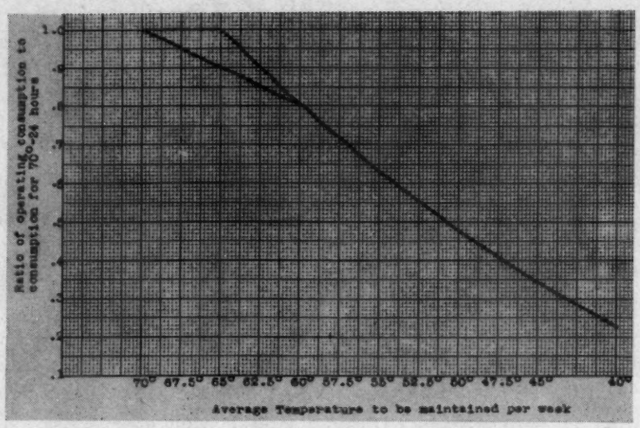
Checking the accuracy of these methods by taking an average of a group of jobs is inadequate because it does not show how many are too high or too low, and usually if enough jobs are taken the errors are balanced out.

The analysis, of 27 installations, shows a fairly good agreement between the three methods, except in four instances. Compared with the actual consumption, however, one-quarter of the estimates were low, one-quarter approximately correct and one-half high; the lowest estimate under-rated the consumption by 50 per cent and the highest over-rated it by above 500 per cent. There were only a few jobs estimated really close to the actual consumption, demonstrating the need for taking into consideration factors other than heat loss calculations if an accurate estimate in a large percentage of jobs is to be expected.

FIG. 1.

Curve showing the ratio of gas consumption on unit heater installations maintaining average temperatures lower than 70°, to the gas consumption which would be used if unit heater installations maintained 70° temperature.

These ratios were arrived at by figuring degree days directly from the temperature carried (except 70° was figured from 65°) based on daily normal temperature in Chicago.



The only conclusions that can be drawn are:

1. That there is a need for further study in estimating gas consumption on unit heater installations; and

2. Any method now in use is not sufficiently accurate to cover a large percentage of jobs unless along with it consideration is given to:

(a) More accurate heat loss calculations.

(b) Careful consideration of heat producing apparatus in the building, including people.

(c) Careful consideration of air changes, particularly where exhaust fans are used.

(d) Careful consideration of the introduction of cold materials into heated spaces.

Designing and Selling Vented Heating

● **BERT P. FISHER, Payne Furnace & Supply Co., Inc., Beverly Hills, Calif.; addressing A.G.A. Southern-Southwestern Regional Gas Sales Conference, Dallas, Texas, February 20-22, 1935—(Abstract by WESTERN GAS):**

THE first step in a modern vented heating appliance sales program is a well planned employee educational campaign, presenting the merits of vented heating. A most favorable opportunity for sales exists at the present time, during Government sponsorship of home rebuilding and modernization.

The sale and design of vented heating appliances in the South present considerations not encountered in other areas. Houses have not been constructed to facilitate heating; ceilings are high, there are large glass and outside door surfaces, very little weather stripping or insulation and few solid foundations or basements. Heat losses must be figured with liberal allowance for extreme conditions, and heating systems should always be installed to take care of the lowest temperature on record. High average summer temperatures in the South create a demand for high average indoor temperature in the winter. Many customers, particularly elderly people, are not comfortable with indoor temperatures of 70 degrees, but desire instead temperatures of 74, 76 or even 80 degrees. To maintain a temperature of 75 degrees takes 57½ per cent more fuel than to hold 70 degrees; for 80 degrees it will take 115 per cent more fuel than for 70 degrees. Great care must be taken, then, to avoid inadequate capacity.

Poor venting is one of the most frequent causes of unsatisfactory vented appliance operation. The "Ten Com-

mandments" of venting are herewith presented:

1. Make the vent connection as short as possible—always shorter than the height of the chimney or flue by 20 to 30 per cent, but never over 20 feet long.
2. Give the vent connection all of the upward pitch from furnace to chimney or flue it is possible to get. One inch rise to the 1-foot run is the minimum.
3. Keep the vent connection from contact with the ground at every point.
4. Use unglazed terra cotta for vertical flue linings. If a separate flue is run it should be an insulated type.
5. Firmly wire or strap the vent connection in place so it will not sag and "trap" the flue gases.
6. Under no conditions allow other gas appliances to be connected into the furnace vent connection except through a spitable junction fitting, and then only when proper increase is made to accommodate the increased volume of flue gases.
7. Use a chimney or flue as near the center of the house as possible or install a flue in similar location.
8. If compelled to install a vent outside of the house, see that it is well insulated.
9. Carry all flues, chimneys or vents at least 1 foot above the highest ridge of the house or above the highest ridge within 20 feet of the point where the vent comes through the roof.
10. Use a good roof cap with double deck cowl and wind rim with openings equal to the full square inch area of the vent.

The salesman should stress the following advantages of vented gas heating: Cleanliness, flexibility, economy, fuel paid for after use. A well prepared and memorized sales talk is desirable, and competitive equipment should not be discussed unless necessary. The installation should be sold, and its advantages stressed, as a whole or complete unit, without dependence on "gadgets" as selling points.

Selling and Installing Water Heaters

● C. W. MERRIAM, JR., Division Commercial Manager, Consolidated Electric & Gas Co., Roanoke, Va.; addressing Mid-Winter Sales Conference, Pennsylvania Gas Association, February 21, 1935—(Abstract by WESTERN GAS):

A SURVEY of 24 properties operated by the Consolidated Electric & Gas Co., in the Spring of 1933, disclosed that the saturation with automatic water heaters was approximately 10 per cent, with a small number of these in actual use.

Analysis showed the situation to be as follows: Gas automatic hot water generally considered a luxury, too costly for benefits derived; selling agencies inadequately informed as to performance possibilities, operating costs, customer demand; unfortunate selections as to size; inadequate installation and service technique; high ratio of repossessions; demoralized sales and service organization.

The income of the middle class of customers, towards which sales activities were to be directed, would not sustain the existing monthly gas bill of $5.00 and upward for automatic hot water; it was considered that $2.00 per month above the method of water heating already in use by the customer was the limit for satisfactory sales results. Economy of operation appeared to be the only answer, and further investigations were made along this line.

It was found that the average automatic hot water system delivered at the faucet only 38 per cent of the total heat applied. The losses were: Flue while burning—17 per cent; flue while not burning—10 per cent; through walls—13 per cent; piping system—14 per cent; faucet waste—8 per cent. Investigation of lowest satisfactory thermostatic setting developed the chart shown as Fig. 1, disclosing the increased gas consumption as a result of high water temperature. By "B.t.u.-Gallons" is meant the daily water consumption in gallons multiplied by the temperature rise. A summary of the economy measures considered meritorious were:

Thermostat setting of 135 degrees F.
Selection of smallest storage-heat input ratio compatible with serviceability.
Location of heater near kitchen sink, draft permitting.
Insulation of exposed hot water lines.
Trapping hot and cold water lines at heater.
Separate copper tubing to kitchen sink.
Snap action faucet and rewashering of all hot water faucets at time of heater installation.

By adhering to the above practices the average gas bill could be reduced 20 to 30 per cent, sufficient to make automatic hot water attractive to the majority.

The next move was an educational program to equip the sales and service personnel with the above facts and sufficient general knowledge to carry out the rental-purchase program that was then inaugurated.

This program was simply a $1.50 down payment and $1.00 per month rental under a lease of personal property agreement permitting the lessee a 30-day cancellation privilege at any time for any cause whatsoever. At the end of a stated period (68 months on 20-gallon heaters and 75 months on 30-gallon) title is to be transferred automatically. For a cash settlement the lessee is granted a $15.00 allowance any time during the first 12 months and thereafter a 10 per cent discount on the unpaid balance. These terms and price set-up cover all direct expenses but only a small margin remains for overhead or merchandise profit.

During the calendar year of 1934 total sales and/or rentals after all repossessions in the District averaged 4 per cent of connected meters, representing thereby an increase of approximately 40 per

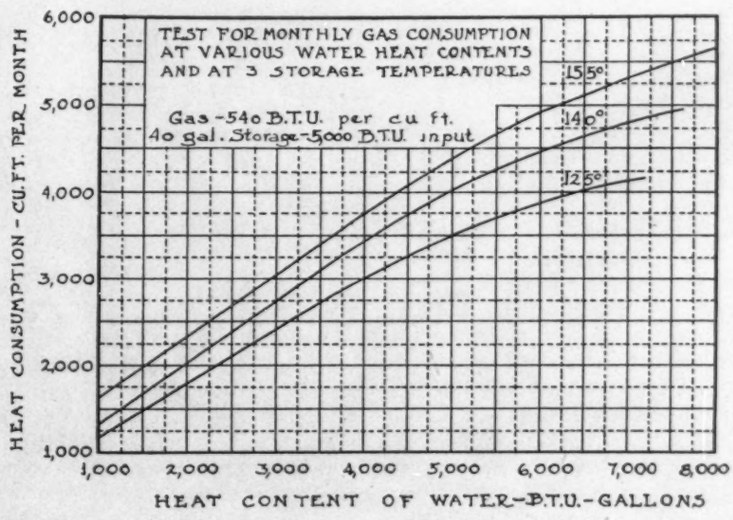

TEST FOR MONTHLY GAS CONSUMPTION AT VARIOUS WATER HEAT CONTENTS AND AT 3 STORAGE TEMPERATURES
Gas - 540 B.T.U. per cu ft.
40 gal. Storage - 5000 B.T.U. input
155°
140°
125°
HEAT CONSUMPTION - CU. FT. PER MONTH
6,000
5,000
4,000
3,000
2,000
1,000
1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000
HEAT CONTENT OF WATER - B.T.U. - GALLONS

FIG. 1.

cent in automatic heater saturation and being 378 per cent of the sales of the previous year. Heater returns for the year 1934 were a little less than 3.6 per cent of the total installations made, which were at a considerably less rate than formerly on regular conditional sales agreements.

Analysis was recently made of the monthly gas consumptions for corresponding months both before and after the installation of the first 100 domestic automatic heaters sold in the last spring drive. In selecting the 100 customers, no distinction was made as to whether or not heaters constituted replacements of gas or of some other fuel. Before installation of an automatic heater the average consumption was about 4,000 cubic feet per month. After the installation the average monthly consumption jumped to about 5,000 cubic feet.

Silica Gel for Conditioning Industrial Process Atmospheres

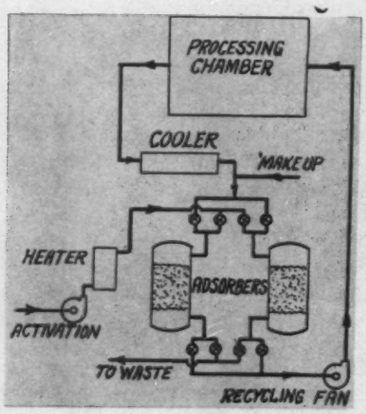


FIG. 1. Recycling system for drying and purifying gases.

• J. MAYNARD LEDNUM, in A. G. A. 1934 Report to Industrial Gas Section, entitled "Silica Gel and Its Uses in Conditioning Air and Gases for Industrial Processing"—(Abstract by WESTERN GAS):

IN INDUSTRIAL plants the gas utilities meet with problems of drying and processing where gas is ideal as a source of heat. This paper presents typical data on adsorption of gases and vapors by Silica Gel and shows various arrangements of equipment which are applicable to the many processing operations where either low or controlled humidities are required.

Silica Gel is a manufactured material obtained by the reaction of a soluble silicate and an acid. The product as used for process conditioning is a hard, glassy material, similar in appearance to clear quartz granules and with similar conchoidal fractures. It is light and highly porous, its internal structure consisting of a myriad of thin-walled capillaries. It is estimated that 1 cubic inch of Silica Gel contains approximately 50,000 square feet of pore surface and the internal pore volume of a granule is 50 to 70 per cent of the total volume.

Silica Gel has been found to take up at room temperature large quantities of the liquids boiling from 50° F. and up, and to release them readily when the gel is elevated to temperatures of 250° F. or higher. Within these temperature limits are included, in addition to water vapor, most of the important solvents, such as ether, acetone, alcohol, benzene, gasoline, acetates, etc. Silica Gel also has quite a capacity for the removal of the more volatile compounds, such as sulphur dioxide, hydrogen sulphide and other corrosive compounds and possesses a great affinity for many of the odorous compounds.

In all industrial applications of Silica Gel, it is primarily essential to bring the granules in intimate contact with the carrier gas. The grade recommended for process conditioning is 8-20 mesh in size, and it weighs approximately 38 to 40 pounds per cubic foot dry basis. This size permits it to be held readily in a bed by means of standard screens.

After Silica Gel has been used in the adsorption stage, it is necessary to revivify it by heating to a temperature above 250° F. in order that it may be used over again for adsorption. This is known as the activation stage. To remove 1 pound of water from the pores of Silica Gel requires a supply of 2,100 to 2,650 B.t.u. of heat in the activating air. The heat for activation may be obtained from an efficient fuel gas burner in which case the products of combustion are mixed directly with the activating air or gas. The structure of the gel is inert, and its life is indefinite, so long as it does not come in contact with vapors or gases (such as hydrofluoric acid vapor) which react chemically with silica. The maximum efficiency of removal of water vapor and the adsorptive capacity of the gel will not be affected at all if the temperature of activation does not rise above 600° F., and only slightly up to 800° F.

A complete unit as shown in Fig. 1 finds application for drying and removing impurities from furnace gases in annealing ovens to produce metal of uniform texture and bright plates or wire of steel, copper or other metals. The recycled gas from the oven is cooled previous to passing through the Silica Gel bed. The make-up gas is added to maintain a balance in the furnace. The impurities removed by the gel may be traces of hydrogen sulphide, sulphur dioxide or other corrosive compounds. This arrangement is adaptable in any other process arrangement requiring dry gas and the removal of objectionable vapors for which Silica Gel has an affinity.

Leakage Survey of Cast Iron System

• CARROLL DILLER, engineer of gas distribution, Arkansas Natural Gas Corp., Shreveport, La.; addressing A. G. A. Southern-Southwestern Regional Gas Sales Conference, Dallas, Texas, February 20-22, 1935—(Abstract by WESTERN GAS):

WITH the advent of natural gas, many manufactured gas mains were converted and became a part of natural gas distribution systems. After a few months operation a very decided increase in the indications of escaping gas was noted in those sections where these original mains were located. Bar tests indicated that gas was escaping from the mains at the joints, and upon investigation it was found that the dry natural gas was causing the yarn to dry and shrink up, thereby allowing the gas to escape around the lead in the bells. The problem narrowed down to finding a satisfactory method of eliminating this leakage by rendering the bell and spigot joint gas tight. In view of the successful results that had been obtained in the elimination of leakage by the installation of clamps, it was decided to use this method in the gas distributing systems supplying Shreveport, La., Little Rock, Ark., and Texarkana, Ark-Tex.

The boundaries of the business district in each town were definitely located and the mains in the district divided into sec-

tions a block in length for testing. The method of testing is by the standard shut in process in which the section is isolated with inflated bags set in the main, a gas tight seal being effected by the use of water. A 10-light iron case curb meter is installed in a bypass around one set of bags to measure the leakage. Each section is subjected to two tests. The first test is made to determine the leakage in company owned property, i.e., the mains and services to the curb. It is possible to do this because stopcocks and curb boxes have been installed in all services in the business districts of these cities. The second test took in the services from the curb to the meter loop. The results make it possible, by subtraction, to accurately ascertain the leakage in both the company- and customer-owned properties, which leakage is a good indication of the condition in each, and determines the necessity for repair.

The customer-owned services receive first attention. Each one is tested to 15 pounds by using a standard pump and gauge and, if found leaking, the property owner is given formal notice to make the necessary repairs within a certain period of time, usually 48 hours, in order to avoid the discontinuance of gas service. A minimum amount of trouble has been experienced with this procedure. Each company-owned service in the section is disconnected from the main and subjected to a 15-pound pressure test. This procedure makes it necessary to break the pavement at each service connection. If the service does not hold pressure it is renewed. A preliminary retest is now made to ascertain the effect on the leakage of the service replacements, also to determine the leakage existing at the bells of the cast iron main. The bells are not uncovered if no leakage exists. If, however, an appreciable amount of leakage still exists the pavement is broken and each bell uncovered. It is thoroughly cleaned of dirt with a wire brush, then the lead is driven up as far as possible. If the lead is driven up beyond a certain point, the space to the face of the bell is filled with a cold lead strip before the clamp is installed. The completed installation is thoroughly tested with soapy water for leaks. The backfilling is carefully done to prevent future trouble with the replaced pavement. The main is now subjected to another preliminary retest by the repair foreman as a final check on his work. If leakage still exists it is usually in abandoned service or street light connections of which there is no record.

The testing and subsequent repairing of the sections in the congested business districts is considerably more complicated, due mainly to traffic, and is therefore more expensive than the average work. The consolidated report of the survey program shows that it costs approximately $175 per mile of 3-inch main to do this work in these districts.

This program has been in operation about 18 months and the results have proven satisfactory. Indications of gas in manholes and basements adjacent to the sections repaired have materially decreased.

Handling Enameled Gas Appliances

• ARNOT HIRST, Purchasing Agent, Providence Gas Co., Providence, R. I.; addressing Operating Division, New England Gas Association, January 11, 1935—(Abstract by WESTERN GAS):

WHEN a customer purchases a new and modern gas appliance, such as a clock-controlled range or refrigerator, he expects to receive a perfect product.

Only the utmost care in receiving, handling and delivering an enameled range or refrigerator will assure an exterior appearance thoroughly satisfactory to the customer. The manufacturer of such an appliance is obligated to make a study of crating design and shipping problems so that the range will reach the gas company in the best possible condition. In the event that the condition appears to be unsatisfactory, damaged parts should be replaced before the range is delivered to the customer—for two reasons:

First, such parts can be replaced in the gas company's storeroom at lower cost than they can be replaced in the customer's kitchen because of lower labor costs, the shorter time necessary, and the absence of transportation costs.

Second, the outside appearance of the range is of great importance to the customer, and no enameled gas range ever looks the same to a customer after it has been partially dismantled in order to replace a piece of damaged enamel.

In the Providence Gas Co. practice all ranges are given an initial inspection as soon as possible after they arrive at the storeroom in an attempt to locate scratches, spots, chipped enamel, or enamel otherwise defective. This inspection also includes the fitting of oven doors, utility drawers, coveralls, and gas cock handles. Each range is wiped with a cloth and cleaner before being accepted by the inspector. If a range is chipped or there are parts defective in any way, the defective locations are indicated with black crayon and the inspector gives the storeroom order clerk a memorandum so that the replacement part can be ordered. After due passage of time, this repair part is received and is replaced by an appliance repair man. A printed form, which is known as the "Storeroom Range Inspection Guide," must be filled out and attached to each range. The items designated to be investigated are are follows:

Inspect range for chips.
Clean range for chips.
Burn off.
Check thermostat with oven thermometer.
Test thermostat for leaks.
Test oven and rail cocks for leaks.
Test unions and all fittings for leaks.
Check for sand holes in top burner.
Check for sand holes in oven burner.
Test oven burner.
Do controls work properly?
Fasten and fit legs in place.
Does oven door fit?
Does condensation form in oven?
Does broiler door fit?
Any condensation on it?
Do all top burner cocks turn easily?
Air shutters tight?
Do top grates fit?
Are rail cock indicators tight?
Do they scrape?
Regulate top burner lighter.
Any leg bolts missing?
Any band bolts missing?
Does it have broiler rack and pan?
Does it have two oven racks?

A range which has successfully passed this inspection and this preparation is ready for delivery to the customer. A pad is laid upon the floor of the truck and the range placed on this pad. A padded cover is placed entirely over and around the range in order to protect it from damage in transit.

If the range is to be held in the storeroom for delivery at some future time, after the testing has been finished, it is placed on a platform or rack which has been especially designed for such storage. This platform is made of wood and costs about $1.00. It has been developed to hold a range with detached legs and is so constructed that a lift-truck can be put under the platform and the range moved about at will. This platform is high enough so that the detached legs can later be fitted without lifting the range from the platform.

It is the endeavor of those in a supervisory capacity at the storeroom to emphasize to the inspectors and the workmen the fact that the initial impression made upon the customer by a new appliance is very apt to be a lasting impression.

When gas refrigerators are received, the cabinets are inspected for damaged parts and any such parts are segregated into two classes: Those for which the

transportation company is responsible, and those where it is felt that the responsibility rests with the manufacturer. The necessary replacement parts are ordered and, where it is appropriate to do so, a claim is filed against the railroad company.

It is less costly to deliver a satisfactory range or refrigerator than it is to make over an unsatisfactory piece of equipment. The care that is taken in handling enameled and automatic appliances will contribute substantially toward the goal of all gas utilities—thoroughly satisfied customers using gas service to the greatest possible extent.

Gas Exhibit for Los Angeles Housing Exposition

TO stimulate the developing interest in home building, under Title 2 of the National Housing Act, N.H.A. regional offices have been encouraging local housing expositions in principal centers, a number of which were held in March. These expositions represent the best possible agency for getting the story of modern gas equipment to those interested in home building.

In Los Angeles, Calif., the N.H.A. supervisor interested a citizens committee in staging a housing exposition, for three weeks, beginning May 18, and from this beginning has grown the most ambitious exhibit undertaking of any N.H.A. tie-in activity to date. Gas companies and manufacturers are cooperating closely in the plans.

A $100,000 cash guarantee fund was raised by the citizens committee, backed by which an immense permanent building is now rising near Beverly and Fairfax Boulevards, on a 20-acre site. A private syndicate will operate the building following the exposition. The structure is 250 by 400 feet in area, and 50 feet high, and will be the third largest exposition building in the United States.

Gas will be represented in the Los Angeles housing exposition in a cooperative industry exhibit, arranged by the Natural Gas Bureau, representing the new business departments of the three local gas utilities. A committee of gas company and manufacturer members has been appointed to set up the exhibit, consisting of J. E. Kern, Southern California Gas Co.; Clyde H. Potter, Southern Counties Gas Co.; John Redd, Los Angeles Gas and Electric Corp.; E. B. Hanmer, American Stove Co.; ElRoy Payne, Payne Furnace & Supply Co.; and E. H. Reed, W. B. Bastian Mfg. Co.

The gas exhibit will occupy 4,000 feet of floor space, costing $8,000, and another $4,000 or more will go into development of this space. Model kitchens will show modern gas appliances in their proper setting, and numerous other appliance sets will be shown. An island location has been secured at the entrance to the auditorium.

Individual space will be taken close to the industry exhibit by a number of gas equipment firms. There will also be a dozen or more model homes surrounding the main building, in which gas appliances will be well represented. At least two of the model homes will be of steel frame construction and these will be all-gas homes.

It is anticipated that the exposition may be extended beyond the three-week period already set. The 20-acre site is rapidly being filled with attractions which will add to the general public appeal, most of them being closely related to building activities. For example, a toy-town, made up of miniature houses built in a competition among southern California school children from many communities is being promoted by the committee in charge.

Fort Bliss Now 100 Per Cent Gas-Equipped

TEXAS Cities Gas Co., Dallas, Texas, in cooperation with the El Paso (Texas) Natural Gas Co., has recently brought about 100 per cent conversion to natural gas at Fort Bliss, one of the largest military posts in the United States, located near El Paso.

A 3-month survey calling for the work of five men and covering 795 buildings in the fort, started under the supervision of C. H. Price, sales supervisor of the Texas Cities Gas Co.'s El Paso office. The survey set up the cost of heating, together with cost of pipe installed and amount of pipe to complete the job; it consisted of 470 pages of tabulations, graphs, tables, and curves, briefing information under the following principal heads: building identification, design, number of occupants, capacity, type of equipment present, fuel allowance in B.t.u. and recommendations for each building and fuel requirement. Buildings surveyed consisted of troop barracks, officer and non-commissioned officer quarters, warehouses, offices, stables, bakery, and other miscellaneous army post structures.

Assisting in the direction of the survey besides Mr. Price were R. S. Reading, local manager for the Texas Cities Gas Co.'s El Paso office and C. C. Tucker of the El Paso Natural Gas Co.

One hundred per cent conversion to natural gas was brought about when the Government entered an extensive building program on the post, including large barracks for troops, the original specifications for which called for coal stokers. The extensive survey and recommendations by the gas companies brought about a change in the specifications to natural gas for heating these structures which put Fort Bliss in the 100 per cent natural gas category.

An interesting phase of the service to Fort Bliss is the rendering of an over-all bill for all gas consumed to the post quartermaster who remits. The quartermaster is responsible for all individual bills on the post and does the collecting.

100 Per Cent Meter Reading Accuracy Rewarded

Twelve meter readers for The Peoples Gas Light and Coke Co., who read 678,000 meters in 1934 without making an error, were presented with bonus checks by Bernard J. Mullaney, vice president of the company, recently.

Five of the 12 also had perfect records in 1933 and two—Herold Gustafson and Frank Strumski—had perfect records in 1932, three consecutive years.

The average accuracy of the 172 meter readers employed by the company was 99.96 per cent for the 9,925,808 readings made during 1934, the figures show. In other words, a customer could use gas service for 208 years without the liability of having an error made.

Dallas Gas Co. Completes Domestic Sales Survey

A domestic sales survey, which has been under way in the Dallas (Texas) Gas Co. since January, was scheduled for completion the middle of March. The survey has been conducted under the direction of J. M. Lynn, sales supervisor of the company, and C. K. Patton, new business manager, to determine the condition of ranges, water heaters, and heating equipment in Dallas homes, and whether the appliances were adequate to meet demands placed on them. The survey crew was composed of 10 salesmen, each of whom was assigned inspection of 1500 residences. Planning kitchen layouts in connection with building under the Federal housing program was a part of the survey work.

American Chemical Society Annual Meeting in San Francisco

Gas and combustion will be given a prominent place on the program of the national meeting of the American Chemical Society, to be held during the week of August 19th in San Francisco. Details of the program have not yet been announced, but it is expected that a number of papers will be delivered by representatives of the gas industry on the Pacific Coast, on combustion and fuels.

Chairman of the Division of Gas and Fuel Chemistry of the American Chemical Society is Wilbert J. Huff, professor of Gas Engineering at Johns Hopkins University, Baltimore, Md.

James B. McCabe, President, Municipal Gas Co., Passes

James B. McCabe, president of the Municipal Gas Co., of Dallas, Texas, passed away on March 28 at the age of 61, from heart attack. Mr. McCabe was a native of Pennsylvania and active in the natural gas industry for 39 years, having participated in the construction of early long distance pipe lines from Pennsylvania to New York. He came to Texas in 1909, and after a short time was made chief accountant of the North Texas Gas Co., and later, in 1928, elected president and general manager of Municipal Gas Co.

Receiver for Vicksburg Gas Corp.

J. T. Brown, president of the Capitol National Bank of Jackson, Miss., has been appointed receiver for the Vicksburg (Miss.) Gas Corp.

Vol. 2 of "American Gas Practice" Treats Distribution, Utilization

JEROME J. MORGAN, M.S., Ph.D., author and publisher of "A Textbook of American Gas Practice", has announced publication of Volume 2, dealing with distribution and utilization of city gas. Volume 1 covered the production of manufactured gas. The author is associate professor of chemical engineering at Columbia University.

Volume 2 comprises 1031 pages, with 391 illustrations, and sells for $8 a copy. Among the subjects covered are: Storage of gas, mains and services, compressors, governors, and gas mixers, meters, distribution design, new business, combustion of gases, atmospheric gas burners, domestic appliances, heat capacity, heat transfer, and heat losses, temperature measurement and control, house heating and cooling, general industrial applications, gas furnace design, selection of an industrial fuel, testing and research, safety, accounting and statistics, principles of rate making, and public relations.

Copies of the textbook may be secured from the publisher at Maplewood, N.J.

Frank L. Chase Appointed on New Federal Commission

Frank L. Chase

FRANK L. CHASE, vice-president and operating manager of the Lone Star Gas Co., has been appointed by Secretary of the Interior Harold L. Ickes, to the Advisory Board of the United States Bureau of Mines. The board consists of representative members of all branches of the mineral industry and will function as an advisory body to the chief of the bureau on matters of bureau policy affecting relations with the industry.

Portland Gas and Coke Company Inventory Costs $59,000 to Make

Portland Gas and Coke Co. has completed a detailed inventory of the company's plants and properties in compliance with Oregon Public Utilities Commission orders. The inventory fills 4,000 typewritten pages and was made at a cost of $59,000. It includes estimates of reproduction costs at present day prices, and is being submitted to the Commission for use in determining the value of the property for rate-making purposes.

TVA Project Investigation Report Available

The Oklahoma Utilities Association, 1020 Petroleum Building, Oklahoma City, Okla., is offering for general distribution, at $2 a copy, a 28-page printed report by R. D. Cockrell, covering 7 weeks' investigation of the T. V. A. project, as long as the supply on hand lasts. No charge is made to members of the Association.

San Diego Consolidated Gas and Electric Co. crews laying 8-inch cast iron main in Balboa Park, site of the California Pacific International Exposition.

Gas Men Prepare for Opening of Fair at San Diego

WITH the gala opening of the California Pacific International Exposition set for May 29, San Diego Consolidated Gas and Electric Co. is losing no time in bringing gas service facilities at Balboa Park, San Diego, into the pink of condition. In the illustration above work crews of the company are seen reconstructing an 8-inch cast iron line in Balboa Park as one of the main feeds for the Exposition grounds.

The Exposition is being held on the same site as that of the Panama Pacific Exposition 20 years ago, and all of the permanent buildings from the former exposition will be utilized and occupied by this year's show. The San Diego gas company's distribution department headed by D. H. Perkins, superintendent, has reconditioned the entire system supplying these older buildings.

In addition to the above structures many new ones are being erected including the Women's Palace, Federal Building, California State Building, Travel and Transportation Building, and the Ford Building. Extension of lines for high pressure gas service is now under way in "The Palisades" area of Balboa Park, where the above buildings are located. Plans are also being prepared to lay mains into the Spanish Village and Midway Section which constitute the Exposition fun zone, and last but not least, Mr. Perkins states that the company has already installed a gas service for the Nudist Colony.

Gas appliances and other utilization equipment will have a prominent place in several special attractions at the Exposition, and more details on this feature will be offered in *Western Gas* for May.

Franchise Offered Oklahoma City by O.N.G. Co.

Oklahoma Natural Gas Co., Tulsa, Okla., on March 5 presented to the council of Oklahoma City a 25-year franchise proposal, one provision of which is that the city may exercise its option to buy the Oklahoma City property at the end of any 5-year period. The proposed franchise also provides for a 2 per cent tax on the company's gross receipts, with no change in domestic rates. The company asked that May 28 be set for election on the franchise. Oklahoma Natural is now serving in Oklahoma City without a franchise.

Water Heater Cooperative Campaign Under Way in P. G. and E. Area

The "Industry Spring Automatic Gas Water Heater Campaign," sponsored by the Pacific Gas and Electric Co., is now under way in northern California, having begun on March 1 and to extend until May 30. Eighteen manufacturers and jobbers, and dealers are participating in this well organized program, in which exceptionally low terms are being offered to move merchandise.

Terms of $3.00 down and $3.00 per month are being made available, with 36 months as the maximum time for payment. Dealers are provided with financing on paper underwritten by the manufacturer or jobber.

Dealer advertising in this campaign is being stimulated by the Pacific Gas and Electric Co.'s special fund of $5,000 which was established to pay one-third of the dealers' advertising previously submitted to the company for approval. In addition, the company is actively supporting the campaign with its own billboard, newspaper and direct mail advertising.

F. G. Robinson Leaves Lone Star

F. G. Robinson, former traffic manager of the Lone Star Gas Co., Dallas, Texas, has been named traffic manager of the Galveston, Texas, Chamber of Commerce. He has been engaged in similar work for 26 years.

Memphis Is Center of Interest as Natural Gas Convention Dates Approach

MEMPHIS is ready for natural gas men, who will converge on this Southern metropolis May 6 for a four-day meeting of the A.G.A. Natural Gas Department—the first separate convention since 1933. The convention dates, May 6-9, fall in the midst of the 5th annual Memphis Cotton Carnival which will provide more than the usual entertainment, even for the natural gas group. On account of Cotton Carnival crowds, delegates are warned to arrange their hotel reservations well in advance. Headquarters are at the Peabody Hotel.

W. J. O'Brien, president of Memphis Power & Light Co. heads the general arrangements committee, and J. J. Brennan, also of the host company, is chairman of entertainment.

No item has been overlooked to make the program worthy of a national convention. As the following program indicates, both technical and sales branches of interest are well balanced, and the program headliners represent some of the industry's ablest leaders:

Monday, May 6—9:30-12:00

H. C. COOPER, *Chairman*

Natural Gas Department—Committee Meetings.

GENERAL SESSIONS

Monday, May 6—2:00-5:00 p.m.

JOHN B. TONKIN, *Chairman*

Opening Remarks by the Chairman—John B. Tonkin.

Invocation—Dr. Robert H. McCaslin.

Introduction of the Mayor of Memphis—W. J. O'Brien, Memphis Power and Light Co., Memphis, Tenn.

Address of Welcome—Mayor Watkins Overton, Memphis, Tenn.

Chairman's Address—John B. Tonkin, Peoples Natural Gas Co., Pittsburgh, Penn.

Address—Percy S. Young, President, American Gas Association.

Review of Association Work—Alexander Forward, Managing Director, American Gas Association, New York City.

Taxation and Legislation—R. W. Gallagher, Standard Oil Co. of New Jersey, New York City.

Report of Program Committee—A. E. Higgins, Secretary, Natural Gas Department, Dallas, Texas.

Tuesday, May 7—9:30-12:00

(General Session on Technical Matters of General Interest)

H. C. COOPER, *Chairman*

Appointment of Committee on Final Resolutions. John B. Tonkin, Chairman, Natural Gas Department.

Report of Main Technical and Research Committee and Sub-Committees. H. C. Cooper, Hope Natural Gas Co., Pittsburgh, Penn.

Developments in Gas Discovery from the Peach Sprout to the Seismograph—D. F. Carlton, Humble Oil and Refining Co., Houston, Texas; J. French Robinson, Hope Natural Gas Co., Pittsburgh, Penn.

Pressure Piping Code of the A.S.M.E.—H. D. Hancock, Henry L. Doherty and Co., New York City, N. Y.

Wednesday, May 8—9:30-12:00

WM. MOELLER, JR., *Chairman*

Bureau of Mines—Dr. John W. Finch, United States Bureau of Mines, Washington, D. C.

The Need and Justification of Natural Gas Reserves and Their Conservation—Ralph E. Davis, Ralph E. Davis, Inc., New York City; R. E. Wertz, Amarillo Gas Co., Amarillo, Texas; H. A. Wallace, United Fuel Gas Co., Charleston, W. Va.; A. F. Bridge, Southern Counties Gas Co., Los Angeles, Calif.

Improvements in Transmission and Compression of Natural Gas—E. R. Duree, Northern Gas and Pipe Line Co., Omaha, Nebraska; J. L. Foster, Lone Star Gas Co., Dallas, Texas; A. L. Forbes, Jr., Western Gas Co., El Paso, Texas.

Thursday, May 9—9:30-12:00

JOHN B. TONKIN, *Chairman*

Wrinkles—H. J. Hoover, Natural Gas, Cincinnati, Ohio.

Natural Gas Fellowships and Educational Progress in Gas Engineering—J. B. Tonkin, Peoples Natural Gas Co., Pittsburgh, Penn.; Robert I. Snyder, Natural Gas Fellow, West Virginia University, Morgantown, W. Va.; Kermit J. Sonney, Natural Gas Fellow, University of Oklahoma, Norman, Okla.

Natural Gas for Air Conditioning—George M. Parker, Mississippi River Fuel Corp., St. Louis, Mo.; C. A. Breitung, Southwest Gas Utilities Co., Ada, Okla; E. A. Jones, L. J. Mueller Furnace Co., Milwaukee, Wis.; Frank H. Adams, Surface Combustion Co., Toledo, Ohio; James C. Patterson, Bryant Heater Co., Cleveland, Ohio.

The Attention of the Entire Organization to Gas Sales—E. M. Tharp, Ohio Fuel Gas Co., Columbus, Ohio.; S. B. Severson, Republic Light, Heat and Power Co., Buffalo, New York; Chester L. May, Community Natural Gas Co., Dallas, Texas.

PARALLEL SESSIONS

Tuesday, May 7—2:00-5:00 p.m.

DISTRIBUTION, SALES, AND UTILIZATION

J. V. STRANGE, *Chairman*

Corrosion as It Pertains to City Plants—Charles F. Turner, East Ohio Gas Co., Cleveland, Ohio; E. A. Munyan, Union Gas and Electric Co., Cincinnati, Ohio.

Modern Methods of Meeting Competition—W. W. Winter, Atlanta Gas Light Co., Atlanta, Ga.; C. E. Dougherty, Chattanooga Gas Co., Chattanooga, Tenn.; H. G. Bonner, Knoxville Gas Co., Knoxville, Tenn.; H. G. D'Spain, Mississippi Public Service Co., Amory, Miss.; F. M. Rosenkrans, Gas Service Co., Kansas City, Mo.

Gas Hair Dryers—C. K. Patton, Dallas Gas Co., Dallas, Texas; C. B. Wilson, Little Rock Gas and Fuel Co., Little Rock, Ark.

Tuesday, May 7—3:00-5:00 p.m.

INDUSTRIAL GAS CONFERENCE

An open meeting with general discussion from the floor. There will be no set program.

Tuesday, May 7—2:00-5:00 p.m.

NATURAL GAS PRODUCTION

R. W. HENDEE, *Chairman*

DON M. WILSON, *Vice-Chairman*

Control of Gas Wells:

1. Bottom Hole Chokes—H. C. Otis, Southern States Co., Dallas, Texas; B. M. Nowery, United Gas Public Service Co., Houston, Texas.
2. Directional Drilling and Its Control—H. P. George, Southern California Gas Co., Los Angeles, Calif.
3. Natural Gas Storage—J. H. Dunn, Lone Star Gas Co., Dallas, Texas; Harry Stevens, Cities Service Gas Co., Bartlesville, Okla.; Paul Sticelbar, Central States Power and Light Co., Tulsa, Okla.
4. Modern Cementing Practices—C. P. Parsons, Halliburton Oil Well Cementing Co., Duncan, Okla.

Wednesday, May 8—2:00-5:00 p.m.

SALES, UTILIZATION, AND DISTRIBUTION

W. W. WINTER, *Chairman*

Gas Engines for Power—W. J. Briggle, Jr., Lone Star Gas Co., Dallas, Texas; E. D. Milener, American Gas Association, New York City; W. M. Jacobs, Southern California Gas Co., Los Angeles.

Modern Advertising for Sales—George Ketchum, Ketchum, MacLeod and Grove, Pittsburgh, Penn.; C. D. Greason, Gas Service Co., Kansas City, Mo.; Legare Davis, Atlanta Gas Light Co., Atlanta Georgia; W. C. Grant, Lone Star Gas Co., Dallas, Texas; W. G. Wiegel, Lone Star Gas Co., Dallas, Texas.

Dealer Cooperation—A. E. Higgins, Natural Gas Department, American Gas Association, Dallas, Texas; M. L. Capp, Oklahoma Natural Gas Co., Tulsa, Okla.; H. E. Meade, New Orleans Public Service, Inc., New Orleans, La.

Wednesday, May 8—2:00-5:00 p.m.

TRANSMISSION AND COMPRESSION

ELMER F. SCHMIDT, *Chairman*

JOHN CLARK, *Vice-Chairman*

How to Make a Pipe Line Corrosion Survey—Scott Ewing, United States Bureau of Mines, Washington, D. C.

Dehydration of Natural Gas—A. B. Allyne, Southern Counties Gas Co., Los Angeles, Calif.

Compressor Stations—B. L. Rogers, Lone Star Gas Co., Dallas, Texas; O. H. Moore, Lone Star Gas Co., Dallas, Texas.

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FREE—*a copy of "How to Run Better Sales Contests," autographed by the author, to all sales managers who register early.*

THIS NEW BOOK—just off the press—written by a nationally famous authority, is a comprehensive source book of stimulating, novel, tested contest ideas to help sales managers help salesmen sell.

So don't delay in sending in your contest registration. Awards are generous. Every company and every salesman has a good chance to win an award regardless of local conditions and handicaps. If you haven't received registration blanks, write or wire at once to J. W. West, American Gas Association, 420 Lexington Avenue, New York City.

REFRIGERATION COMMITTEE . . . AMERICAN GAS ASSOCIATION

Workman relaying a strip of attic flooring after blowing in the insulation.

Applying 4-inch blanket of insulation through the roof of a two-flat building.

Insulation Reduces Heating Costs in Chicago Homes

BASED on the experience of more than 700 Chicago bungalows and two-flat buildings, The Peoples Gas Light and Coke Co. recently announced the results of a survey showing that heating costs for these buildings have been reduced as much as 30 per cent through the installation of insulating materials. The company's survey shows that actual savings in heating costs have been more than enough to pay for the insulation. By arrangement with private contractors, who install the insulation, it may be paid for on monthly terms.

A study of some 200 of these insulated homes and flats, taken at random to insure a proper representation, is the basis for these claims.

Acceptance of the plan which is open to Chicago users of gas for heating has been enthusiastic. Two-flat owners in particular, who have had difficulty in renting the upper flat because it was hard to keep warm in winter and was too warm in summer, have accounted for a substantial portion of the installations.

The insulating job is done by laying a deep layer of heat-resisting material between the joists of the attic of a house or bungalow, and between the roof joists of a two-flat building. The job can be done in a few hours without inconveniencing the home owner or tenant.

Another benefit from ceiling insulation results from blocking off the upper ends of hollow wall space, since the walls otherwise act as chimneys in drawing heat out of the building.

With the roof lined with this material, which is equivalent to 5 solid feet of brick in its insulating value, the heating plant of the building is reconditioned and adjusted to operate most efficiently at the lower capacity made possible by the reduction of heat loss. A number of installations have been made in cases where the owner faced the alternative of installing a larger heating system or of reducing heat losses from his building, and where he has been able to apply insulation at a substantial saving in first cost and in operating costs. An additional saving is effected with insulation because of the greater efficiency at which heating plants operate when they are not used beyond their proper capacity.

Although of course the most attractive feature of insulation is the saving in heating costs which it makes possible, its advantages in summer months, in reducing the temperature of upper flats on hot days, are also important. In a number of instances Chicago owners have been able to rent the upper flat at a higher rental because they could assure the tenant that he would be comfortable both summer and winter.

The monthly payment for insulation is synchronized with the gas company's rental of the gas burner and controls on a monthly basis, which includes cleaning and adjusting of the heating plant. The home owner is given as long as five years in which to complete payments.

Mississippi Power & Light Sales Staff Changes Announced

R. C. Anderson, residential sales manager of the Mississippi Power & Light Co., Jackson, Miss., is leaving to assume a similar position with Memphis Power & Light Co., according to announcement of Rex I. Brown, vice-president and general manager of Mississippi Power & Light.

L. M. Taylor has been appointed to succeed Mr. Anderson as residential sales manager, and P. O. Smith has been appointed as supervisor of residential sales activities in the Southern, Southwestern, Natchez, Western and Central Divisions, with headquarters in Jackson. John Kimball has been appointed supervisor of residential sales activities for the Jackson Division. W. A. Moore has been given the title of commercial manager. R. E. Baird will return to Mr. Moore's department to assist him.

Large Bond Issue Brought Out for P. G. and E.

Late in March a $45,000,000 Pacific Gas and Electric Co. bond issue, registered with the Securities and Exchange Commission earlier in the month, was placed on the market. The series, maturable in 1964, is offered at $100 par and accrued interest to yield 4 per cent; bonds retirable in 1952 are replaced by the new issue, which constituted the largest piece of financing registered under the securities act up to the date of its entry with the Commission.

A. E. Schwarz Joins Electric Bond & Share as Sales Sponsor

A. E. SCHWARZ, since 1930 sales and advertising manager for the Minnesota Northern Power Co., Minneapolis, left this position April 1 to become sales sponsor for the Electric Bond & Share Co., New York City, in which capacity he will assist in the developing of sales in the E. B. & S. gas properties.

A. E. Schwarz

After completing his education, Mr. Schwarz went into business for himself in a small town in southern Minnesota. He joined the Westinghouse Electric and Manufacturing Co. in 1922, working in the Richmond, Va., Baltimore, Md., and Philadelphia, Pa. offices. In 1924 he transferred to the Chicago office of the company, going from there to the Minneapolis office of the Westinghouse Co., to handle merchandise sales and to contact utilities and jobbers.

Mr. Schwarz became associated with the Minnesota Northern Power Co. in 1930 as sales and advertising manager. He has developed numerous campaigns in gas and electric appliance sales promotion which have been of marked success in the company's territory.

He has been active in American Gas Association Commercial Section programs serving as vice-chairman last year of the Mid-West Regional Gas Sales Conference.

E. B. Voneman, who has been named to succeed Mr. Schwarz as sales and advertising manager for Minnesota Northern Power Co., comes to the organization from the Westinghouse Electric and Manufacturing Co.

New Zealand Representative of Payne Furnace on U. S. Visit

V. H. Fray of Auckland, New Zealand, distributor for Payne Furnace and Supply Co., was on the Pacific Coast in March, spending some time at the Payne headquarters in Beverly Hills, Calif. From there he will continue on his way to the east coast, visiting other gas appliance manufacturers enroute, thence to London, England, returning to Los Angeles for a three months stay, before going back to New Zealand.

German Volume Covering Flame Velocity Announced

Publication of "Der Zundvorgang in Gasgemischen" (The Explosion Process of Gas Mixtures) has just been announced, and may be obtained from Verlag von R. Oldenbourg, Schliessfach 31, Munchen 1, Germany. The book contains 69 pages, dealing with flame velocity and the factors which govern the propagation of flame.

Cagle Managing Commerce District

W. W. Cagle, storekeeper of the Greenville, Texas, division of the Community Natural Gas Co., has been made manager of the Commerce, Texas, district of the company. He has been with the Lone Star Gas System, of which Community Natural Gas Co. is a part, since 1928.

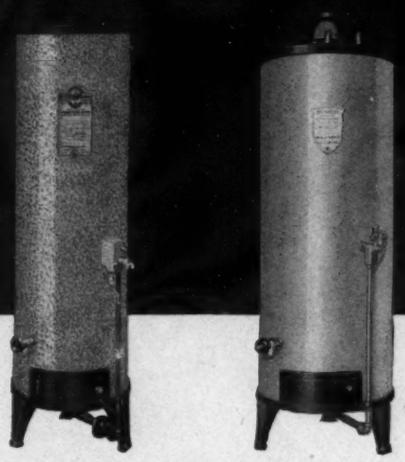
Back of these

Water Heaters

is Sales Service and Manufacturing Background

HERE'S HOW WE HELP YOU SELL:

- 3 piece Direct Mail Campaign, furnished.
- Attractive, sales-producing catalogues in color.
- Arresting displays for your window, including full size, full color replicas of the Water Heaters.
- Colorful truck banners.
- Newspaper Mats and Cuts.
- Trade Paper Advertising to the Heating and Plumbing Industry, Architects, Builders, Chain Store Operators, etc.



(left) **AGP REGULAR** Gas-Fired Automatic Storage Water Heater; 20 to 75 gallons. Baked enamel steel jacket over Galvanized or Everdur tank; only one gas connection

(right) **THE DICTATOR** Low Priced Water Heater. Fully automatic, thermostatic valve; baked enamel jacket and tank of Galvanized or Everdur. 15 to 40 gallons.

AGP

Don't buy just a water heater, to stand and gather dust and deficits on your sales floor...or to bounce back later with troublesome service calls and customer dissatisfaction. Buy *Sales Service*—to move the product out and move the profits in. Buy *Manufacturer's Background*—the dependability and integrity of the maker that helps to sell the product and keeps it sold.

Each of these Automatic Storage Water Heaters by AGP carries with it an assurance of sales and profit, and of satisfaction to your customer. When their obvious advantages are explained, they sell quickly. And they stay sold, and build good will for you.

Write today for details and prices...and for the new, powerful sales promotion material that will help you sell *more* Water Heaters.

AMERICAN GAS PRODUCTS CORPORATION
DIVISION OF AMERICAN RADIATOR COMPANY
40 WEST 40TH STREET · NEW YORK, N.Y.

Long-Term Selling by B. C. Electric

By J. Lightbody

Publicity Manager, British Columbia Electric Railway Co., Ltd.

ALMOST aggressive campaign for extending gas and electric service in the home has been launched by the British Columbia Electric Railway Co., Vancouver and Victoria, B. C., with terms as low as $1.50 a month on gas ranges and $2 a month on electric ranges. Gas and electric automatic water heaters with Monel metal tanks are also being offered on terms of $1.80 a month for the former and $2.45 a month for the latter and up.

In previous years, the British Columbia utility company campaigned for gas and electric ranges by offering free connection service including free piping in the case of gas and free wiring in the case of electric. Last year the offer amounted to the equivalent of this in the form of free electricity and gas for a number of months. The problem, however, remained one of ready cash and it was the complaint of the sales department that unless major appliances such as ranges and water heaters, were made available on terms which amounted practically to rentals, they would be difficult to move. A start was made a year ago with water heaters on an easy payment plan such as this, the terms extending for approximately 6 years. It was determined, therefore, to apply the same plan to ranges and it has met with instantaneous success, according to the company.

The gas range selected is made in full ivory finish with flash back lighter, heat control and insulated oven, and is sold to the customer at an installed price of $105. The customer is asked to pay three monthly payments of $1.50 each in advance and the next payment is not due until the fourth month. When the customer makes 60 consecutive monthly payments or $90 in all, the company cancels the balance of the contract amounting to $15 and gives the customer a receipt in full.

A similar offer is made on the electric range which is sold at an installed price of $160. There are 65 consecutive monthly payments making a total of $130, the company then cancelling the balance of the contract amounting to $30.

In order to induce dealers to bring in prospects, the company offers them $12 each in semi-annual payments of $3. All the dealer needs to do is have the customer sign an application card indicating a desire to purchase a range; the gas company completes the sale, makes the installation and collects all payments. Dealers are also supplied with gas and electric ranges for display purposes on consignment but dealers who do not have a display may take their customers to the nearest B. C. Electric salesroom.

This campaign opened on March 1 and it is believed that as many sales will be recorded for the month of March as took place in three months in 1934. To date 260 ranges have been sold in Vancouver territory, of which 144 are gas and 116 are electric, these including sales of other makes than those offered on the special terms.

MODERNIZE WITH GAS
AUTOMATIC COOKING... HOT WATER... HEATING!
The Plan
Pay Like Rent
B.C. Electric STORES
HOME MODERNIZATION BUREAU • ROOM 112, B. C. ELECTRIC BUILDING

Using the same slogan, "Pay Like Rent," the B. C. Electric Railway company has also reopened its campaign for automatic water heaters with the new feature this year of Monel metal tanks. It is too early to report the progress on this campaign. As in the case of the ranges, these terms for water heaters will be available continuously and not be withdrawn for the present.

Contemporaneously with the advertising on these special campaigns, the B. C. Electric has in process a series of advertisements on modernization; some 12 advertisements will appear in the Vancouver papers up to the end of June. As the B. C. Electric is a combination company, it stresses gas and electric service equally. Another series of advertisements has been begun, selling the idea of hot water, this also being continued into June, it being the general opinion that the necessity for hot water needs to be sold more thoroughly than the convenience of the modern range.

1934 Natural Gas Statistics For California

Natural gas production in California for 1934 was disposed of as follows:

Sold to utilities—183,181,631 M c.f., which represented 63.9 per cent of the total production.

Used in oil company operations—86,880,279 M c.f. or 30.3 per cent.

Unconserved—16,720,038 M c.f. or 5.8 per cent.

Total—286,781,948 M c.f., total dry and casinghead production.

Production in 1933 came to 270,059,500 M c.f.

P. G. and E. Starts Gas Service Instruction Courses

An added employee educational feature will be inaugurated by the Pacific Gas and Electric Co. in April, in its Gas Service Instruction courses, to be initiated at first in the San Francisco and East Bay Divisions of the company, and later extended to all of its divisions.

The courses, which will reach all service men, will consist of the general principles and practical demonstration of service work on ranges, water heaters, floor and space heaters, central furnaces, controls and thermostats. Study will also include the handling of complaints and adjustments of appliances.

A more uniform background and standardized service work will be the aims of the instruction. The course will be carefully worked out, and given periodically to employees.

Gas Service Co. Aims to Sell 5,810 Water Heaters in Campaign

A quota of 5,810 water heaters has been set for new business departments during the Gas Service Co. current water heater rental plan sales campaign. This figure is approximately four times the number sold by the companies in 1934. The campaign started March 2 and 633 water heaters were sold in two weeks' time.

Under the rental plan it is possible for customers to rent a water heater at a price as low as one dollar a month, depending on the price and size of the heater. The customer has the privilege of purchasing the heater for cash, or buying it on the company's regular monthly payment plan of 18 months, at any time during the period of the rental plan contract.

Steel Pipe Line Over San Diego Bridge Completed

Installation of a 16-inch high pressure welded steel pipe line by the San Diego (Calif.) Consolidated Gas Co., has been completed over a newly constructed concrete bridge crossing the San Diego River on the New Pacific Highway in California.

After application of aluminum paint, the completed line was suspended in heavy steel hangers embedded in the concrete deck of the bridge overhead. Thirty tons of pipe were used in the construction.

Rate Reduction Order Restrained In Wichita Falls, Texas

The Texas Railroad Commission's order to reduce domestic gas rates of the Municipal Gas Co., in Wichita Falls from 75 cents to 61 cents was temporarily restrained by the District Court in Austin, Texas, on February 28. Hearing on an application of the company for a permanent restraining order has been set for April 14.

Pacific Gas and Electric Co. Reports Earnings

The Pacific Gas and Electric Co., San Francisco, early in March reported net earnings of $17,692,223 for the year ending December 31, 1934, as compared with $17,395,707 net profit in 1933.

FOR LEADERSHIP

Sell the Leaders!

ULTRA-MODERN STRUCTURALLY IMPROVED

DETROIT JEWEL *and* GARLAND

DETROIT JEWEL

Illustrated is the Senior 42-in. Table Top No. 6520. Can be obtained with or without chrome trim in four colors. Also may be had in smaller Table Top and a large and small Cabinet range.

GARLAND

Illustrated is the Cabinet Range No. 3581. Furnished in four colors. New line also includes a 36-inch Table Top, a 42-inch Table Top and a smaller elevated oven range.

If you are after A.G.A. Contest leadership, then put yourself in the race with leadership material . . . with the new, unsurpassed beauty of the market's leading sellers . . . the NEW, 1935 DETROIT JEWEL . . . or its companion champion, the NEW 1935 GARLAND. These two great ranges represent the most completely equipped and most pleasingly styled RANGES OF QUALITY ever presented to the public.

Responses in record breaking sales are proving these claims. They have a great sales-making combination in magnetic "eye appeal" and unrivalled serviceability. The general construction, too, has been greatly improved. New style burners, with simmering attachment and center lighting, are only one of the innovations of the 1935 line. Safety lock oven valves, new type burner box assembly and general all-over strengthening of the frame are other features of these remarkable ranges. The trims are different, as are many other details of the new line.

Write us at once for catalog and price list.

DETROIT-MICHIGAN STOVE CO.

Detroit, Michigan

The Houston Gas and Fuel Co. KTRH Radio Kitchen, as seen from the street. Entire right side is of glass and in view from the sales floor. Walls are in white with black tile trim. Accessories and utensils are in bright red. Electrolux Refrigerator and a modern water heater occupy a conspicuous place in the opposite end of the kitchen.

Houston Gas & Fuel Radio Kitchen

By FANNIE W. HOFF

Home Service Director, Houston Gas & Fuel Company

OUR Radio Kitchen is the only one of its kind south of St. Louis that is exclusively designed for radio broadcast purposes. The installation was made by KTRH, Houston's C.B.S. outlet. A space has been enclosed in glass, on our salesfloor, as a studio and completely equipped with the most modern gas equipment, and so for a prominent location it leaves nothing to be desired. The kitchen is immaculate in gleaming black and white, and teeming with activity from eight in the morning throughout the day.

The programs are broadcast jointly by Mrs. Louise Heiple who prepares the menu, while the writer describes in detail the various operations involved, incidentally not neglecting an opportunity to mention "Electrolux, The Gas Refrigerator," Insulated Heat-Controlled Gas Ranges, Automatic Storage Water Heaters and any other gas-consuming appliance the occasion permits.

The establishment of this kitchen should be of vital importance to the gas company, as it creates friendliness, encourages the intelligent use of modern gas appliances, and, by correct and helpful answers, may dispose of anxious questions which if not answered with tact would result in a dissatisfied customer.

Programs are sponsored by the Houston Gas and Fuel Co. and two other leading Houston firms. The Radio Kitchen is a new venture, and it is early to express an opinion, but interest seems to be growing steadily. To say that 50 women are contacted each day, through the distribution of recipes, is a reserved estimate and judging from the phone calls and letters it would be safe to increase this number to 75 or more. The broadcast lasts only one-half hour, five days a week, and in that time a complete, adequate, and well balanced menu for three meals is broadcast.

The food for which the recipes are given is actually cooked, attractively displayed and served to the interested audience, of which there are a good number!

Kitchen styling is broached, for certainly modernization suggests new equipment, and the time is propitious as funds have been made available by the National Housing Act.

Gas company customers who come in to pay bills or to make a purchase are among those who show keen interest not only in the cuisine, but more in the gas appliances being used, and in the all-gas kitchen. Men take a serious pleasure in inspecting new ranges, or whatever appliance happens to be the family need.

Considering the number of people who are reached by radio, and the interest displayed, we believe any gas company, where broadcast facilities are available, can profitably sponsor such a program along with its other promotional advertising.

Thos. B. Parks, L. A. G. & E. Purchasing Agent, Passes Away

Thos. B. Parks, purchasing agent of the Los Angeles Gas and Electric Co., passed away in February after a protracted illness. Mr. Parks had been with the Los Angeles utility for 32 years, entering the employ of the old Los Angeles Electric Co. in 1902 as a clerk. He was active in the Pacific Coast Gas Association, and had a large group of friends in the west coast industry.

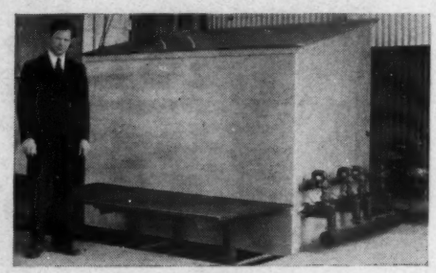
H. J. Kister, manager of construction, and with the company for over 30 years, has been made purchasing agent.

Further Tests Due on Gas Dilution in Texas

E. R. Weaver, chief of the U. S. Bureau of Standards gas section, will conduct tests on gas supplied Fort Worth and Dallas, in laboratories of the Texas Christian University at Fort Worth. On the basis of synthetic gas tests at Washington, D. C. laboratories of the Bureau, Mr. Weaver last month advised the city council of Dallas that elimination of gas dilution at the Joshua stabilizing plant of the Lone Star Gas Co. would cut consumers' bills appreciably. A committee of gas experts retained by the city of Dallas, however, supported the Lone Star's operation of the Joshua plant, which reduces the high heat content of gas received from certain fields to make these supplies interchangeable with gases from other fields. The committee of experts held that the plant's operation was in the interest of efficient gas service.

Can Company Utilizes Gas For Wash Tanks

Portland Gas & Coke Co., recently installed submerged gas burners in washing tanks in the plant of the American Can Co., which maintains a machine shop in Portland to construct and repair machinery for canneries throughout the Northwest and Alaska. Machine parts must be washed in heated cleaning solutions before repairs can be made.



One of American Can Co.'s washing tanks for machinery parts, heated by submerged burners utilizing gas.

Heating is accomplished by automatically controlled blast burners, firing into steel tubes which are submerged in the tank. The tubes are approximately 4½ inches in diameter and lie coiled in the bottom of the tank. Thus, they afford not only a means of efficient heating, but this arrangement results in turbulence or violent boiling of the liquid. Air is supplied to the burners by means of two motor-driven blowers, so the two tanks in use may be operated independently.

The washing is done by submerging the heavy pieces of machinery in the hot solution. Each tank will contain 1000 gallons. Operating at full capacity, the installation requires about 3000 cubic feet of gas per hour.

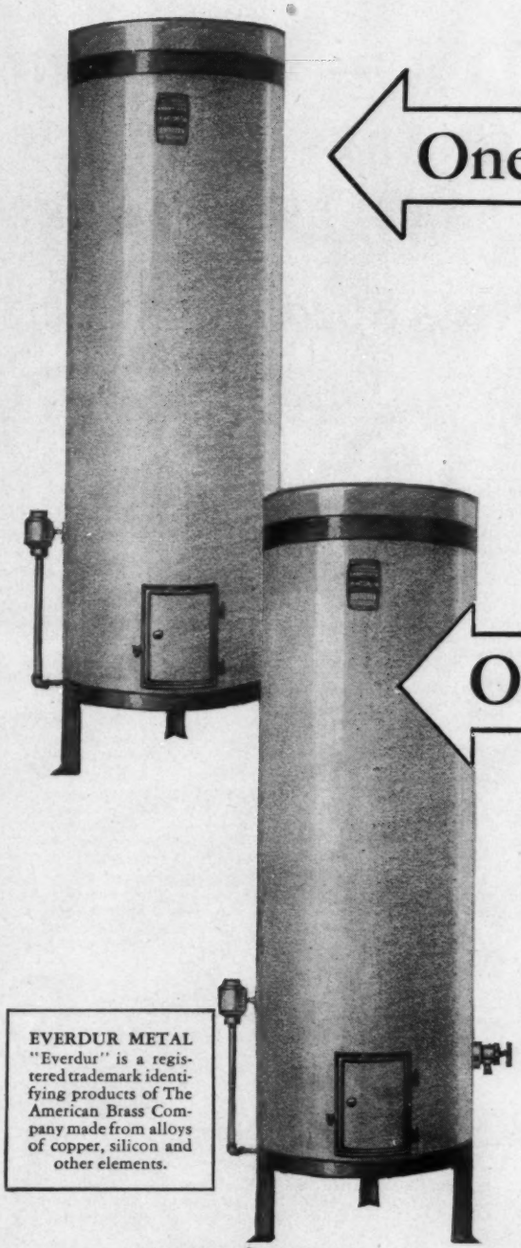
A. O. Leech, industrial engineer, for the Portland Gas & Coke Co., in cooperation with engineers of the Utilization Bureau, arranged an experimental set-up that convinced the American Can Co. gas was the best fuel for the purpose.

C. B. Nolte Made President of Crane Co.

C. B. Nolte was elected president of Crane Co., Chicago, Ill., on March 26. J. B. Berryman, who had been president since 1931, and who has been connected with the Crane organization since 1892, became chairman of the board.

Identical?

Time will show that:



One is a *trouble-maker* *the tank will* RUST

The tank in this heater will give satisfactory service for a few years . . . until tank rust discolors the hot water, perhaps interferes with its steady use. And ultimately, when the tank fails, gas consumption will cease until the heater is repaired or replaced. Meanwhile, profitless service calls . . . and a disgruntled customer who in the end spends more money than he "saved" at first by buying the rustable tanked heater. *Such equipment is wasteful, for the public and the utility as well.*

One is a *profit-maker* *the tank is* EVERDUR

The tank in this heater is made of *rustless* Everdur. It will give satisfactory service indefinitely. Gas consumption will be uninterrupted . . . rust cannot interfere with its performance or shorten its life. Fewer service calls . . . satisfied customers. The slightly higher first-cost of the rust-proof tank is soon saved in freedom from upkeep expense. *Such equipment* . . . automatic gas water heaters with tanks of rustless Everdur . . . *is economical, for the public and the utility as well.*

EVERDUR METAL
"Everdur" is a registered trademark identifying products of The American Brass Company made from alloys of copper, silicon and other elements.

EVERDUR is copper . . . the traditional non-rust metal . . . alloyed in accordance with a special Anaconda formula. It is as strong and readily welded as steel, and lends itself to virtually one-piece tank construction. And Everdur cannot rust! Because of these properties, leading makers of automatic heaters and range boilers now standardize on Everdur for all their rust-proof models.

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

EVERDUR METAL *for* TANKS

The Only Handbook of Butane-Propane Gases

Big 2nd Edition

NOW READY — DETAILING THE REVOLUTIONARY DEVELOPMENTS OF THE PAST TWO YEARS!

This Table of Authoritative Contents Speaks for Itself!

SUMMARY OF DEVELOPMENTS: Brief review of progress during past two years since publication of first edition, including foreign expansion, new industrial uses, new manufacturing sources, new plant and equipment design, etc.

USE IN INTERNAL COMBUSTION ENGINES: A comprehensive discussion of liquefied petroleum gases in this important new use including engine design, comparison of propane and butane with other fuels, use in stationary engines, block testing automotive engines; use in rail cars, trains and locomotives; use in automotive engines; refrigerator cars and trucks; dirigibles and aeroplanes; utilization equipment such as carburetors and mixers, vaporizers, fuel tanks, valves and fittings, etc.; consideration of safety in relation to internal combustion engine use of these gases.

DESIGN AND INSTALLATION OF STORAGE: A fundamental chapter devoted to safe design of storage tanks. Application of the recently adopted A.P.I.-A.S.M.E. Code is thoroughly covered, and reference made to other pertinent regulations, including those of the National Fire Protection Association, the Industrial Accident Commission of California, and others. Discussion of special design problems is included, treating such phases as design of heads, reinforcement of openings, design of skid tanks, emergency relief provisions. Concluding the chapter is a valuable reminder list of essential precautions to observe in ordering storage tanks.

SUPPLY FROM PETROLEUM REFINERIES: Characteristics of refinery gases with reference to liquefied gas production. Detailed discussion of oil absorption and compression processes for liquefied gas recovery; fractionating columns; extraction of ethane from refinery vapor.

ENGINEERING DATA ON THE LOWER OLEFINS: A basic reference chapter consisting of tables on properties of liquefied petroleum gases produced from petroleum refineries—a companion chapter to that in the original Handbook on properties of the natural-gas-produced liquefied petroleum gases.

DOMESTIC APPLIANCE TESTING AND UTILIZATION: Separate discussions of undiluted and carbureted gases from the standpoint of their burning characteristics. Appliance testing procedure on liquefied petroleum gases, with special reference to American Gas Association methods. Fundamentals of appliance design for proper use of these gases. Latest A. G. A. Laboratory Approval requirements. Standards of construction and performance for gas appliance accessories.

ECONOMIC COMPARISONS WITH COAL, OIL, ELECTRICITY, PRODUCER GAS, MANUFACTURED GAS: Introductory section on requirements of a good fuel, available heat of gases, a list of applications for liquefied petroleum gases, relative advantages of propane and butane. A number of ready-reference charts show cost comparisons with other fuels as well as with electricity. Domestic, commercial and industrial comparisons are made in connection with each competitive fuel, and numerous tables present competing fuel cost data for special uses.

TOWN PLANTS: A new chapter combining discussion of butane-air and undiluted types of plants. Written from a practical operating standpoint and giving summarizing comment on a survey which covered every town plant now in operation. New types of plant equipment, and discussion of over-all plant design. Introductory section treats such pre-construction considerations as estimating market, sendout peak loads; plant location, plant structures. Major subject heads are: liquid storage, vaporization, undiluted plants air-mix plants (including description of various types of mixers), gas storage, distribution (system design, odorization, dehydration, conversion, etc.). The operating experience summary which concludes the chapter covers plant and distribution problems, consumer complaints, liquid cost, rates, classification of sales, collection experience, and minimum number of customers required to maintain a central plant property. Flow diagrams and many illustrations.

MANUFACTURE FROM NATURAL GAS: A new chapter dealing with the natural gasoline plant process, with special reference to operations involved in liquefied gas recovery. Flow diagrams assist in presentation of plant processes.

SPECIAL USES: Orchard heating, construction camp use, and various special applications such as cutting and welding.

VOLUME CORRECTION FACTORS: A series of original tables for temperature-volume corrections, ranging from 100° to 149° A.P.I. gravity, and from 20° to 119° F. Tables read both in degrees A.P.I. and specific gravity at 60° F. Also tables for converting specific gravity to degrees A.P.I., and vice versa. Preliminary discussion explains use of tables.

SUPPLEMENTS AND REVISIONS
A number of chapters in the first edition have been retained for the second edition, with additions and modifications made by their original authors to bring them in line with present knowledge. Late information is found in the Handbook on:

TRANSPORTATION: New material on motor truck and trailer design, describing typical equipment in use, pumps for loading and unloading, etc., current railway freight rates; requirements for shipping by water, etc.

USE WITH OTHER GASES: An added section on standby gas, also further discussion of reforming, use of propane for underfiring coke ovens, and use of butane or propane with coal gas under peak load conditions.

ANALYSIS AND TESTING: Specifications for commercial grades, test procedure for determination of specific gravity, water content, vapor pressure, etc. Detailed outline of analytical procedures for various gases and with various apparatus. The above and other additions have been made to the chapter on Composition and Analytical Determination.

PROPERTIES OF MIXTURES: Additional curves are included, among them those on dew points of butane, propane, and typical mixtures, carbureted with air; curves showing relation between B.t.u. and specific gravity.

BOTTLED GAS DISTRIBUTION: This chapter has been brought up to date, with sections on foreign sale of bottled gas, present trends in bottled gas merchandising, new types of service equipment being developed, design of propane bulk plants.

BIBLIOGRAPHY: This valuable feature of the first edition has been extended to list worthwhile material published during the past two years.

CENTRAL PLANT DIRECTORY: A new directory listing all town plants as well as semi-permanent plants on large construction projects; gives information secured directly from the companies on plant location, number of meters, type of service, plant capacity, rates, etc.

CATALOGUE SECTION: Current detailed engineering information on the many products now manufactured for service on butane and propane.

BUYERS' GUIDE: Revised commodity listings of firms supplying equipment, appliances, services for the liquefied petroleum gas industry.

HERE'S A HANDY COUPON

WESTERN GAS, *Publishers*
810 South Spring St.
Los Angeles, Calif.

Please send me one copy of the Handbook of Butane-Propane Gases, the new Second Edition. Enclosed herewith is check or money order for $5.00, and the book is to arrive with shipping charges prepaid. It is understood that if my payment is not mailed with this order the book is to be sent C. O. D.

Name..... Position.....

Company.....

Address..... City and State.....

Check for $..... enclosed Date.....

SEND FOR IT TODAY!

BUTANE-PROPANE NEWS

Shelton Gas Co. to Take Over Nat. Gas Corp. of Wash. Property

The Shelton (Wash.) Gas Co., recently formed to take over the plant and distribution system of the Natural Gas Corp. of Washington, has been granted the transfer of the 50-year franchise originally held by the Natural Gas Corp.

Articles of incorporation have been filed and plans for the expansion of the distribution system are being pushed. The company has issued 2,000 shares of no par stock, of which 1000 shares are preferred and the remaining 1000 shares common.

Incorporators of the new company are C. C. Cole, H. Parry Jones, Alden C. Bayley, D. B. Davies, C. J. Macke, Louis Weinel, Russell Pickens, James Frisken, and C. H. Kreinenbaum, of Shelton. C. C. Cole is secretary-treasurer of the new company.

New Bottled Gas Firm Operating in Texas

The Liquefied Gas Co., recently organized by R. D. Brashear of Ingleside, and R. P. Park and Clyde Vaughn of Aransas Pass, Texas, has begun distribution of bottled gas service in the Aransas Pass vicinity. The fuel is transported in tanks by trucks from Rusk County, Texas plants and is transferred to underground tanks on customer premises.

W. F. Topping Chief Inspector For Bureau of Explosives

W. F. Topping has succeeded Col. B. W. Dunn as chief inspector of the Bureau of Explosives, located at 30 Vesey St., New York City. He will be assisted by Harry Campbell. Col. Dunn, retiring because of poor health, has been active in dealing with the safety problems of the bottled gas industry during its rapid growth.

California Production of Liquefied Gas on Increase

Daily average production of liquefied petroleum gases in California increased in February from 900 barrels to 942 barrels, according to Bureau of Mines figures. Of the 942 barrels 167 came from refineries. Daily average sales increased from 729 barrels to 970 barrels.

Philgas Standardizes on Odorant

Philgas Department of Phillips Petroleum Co., Detroit, Mich., has standardized on ethyl mercaptan as a warning agent in all fuel shipments. Each tank car will receive 1.3 pounds of the odorant.

Utilities Distributors' Dealers to Meet

Utilities Distributors, Inc., supplying bottled gas in the northeastern states, will hold its annual dealers' meeting April 18 at the Portland Country Club, Portland, Me.

National Bottled Gas Ass'n to Stress Interchange of Information Among Members

By H. Emerson Thomas

President, National Bottled Gas Association

THE National Bottled Gas Association has filled a distinct need in the development of this young industry. It has brought the many distributing companies closer together to study their mutual problems. These problems extend into the capital structure, sales development, advertising, equipment maintenance, distribution, safety, insurance, personnel (especially salesman compensation and turnover), customer relation, taxes, N.R.A., competitive fuels, collection procedure, load-building and many other phases of our business.

H. E. Thomas

The past officers and executive boards have in a constructive way laid a foundation on which we hope to expand and, as an association, give a valuable service to the membership on many of the above problems. We hope to accomplish this aim in three ways:

(1) By building the membership until it represents the vast majority of the industry;

(2) By obtaining the cooperation of all members in studying and passing through the association office and its committees a large fund of information, data, statistics, sales plans, etc.;

(3) By disseminating to the membership the information thus collectively obtained through the "Bottled Gas Bulletin," to be prepared and sent out at frequent intervals.

The bottled gas industry is moving into a new era of development and its competition has never been so keen and far-reaching, especially its electric competition. We as an industry must put forward a united front to capture the prospect's dollar—not from one another, but to prevent its going into such other trade channels as the purchase of automobiles, electric appliances, rock gardens, or its use for cocktail parties, a new suit, a trip to Bermuda or Hawaii or "a trip to the moon." We must be on the offensive and not take a defensive attitude. Exchange of valuable sales promotion ideas and operating data in their various details and phases will bring out facts which will make possible more rapid development of every unit in the industry. It is to accomplish this for the industry and thus for each and every distributing company that the association has been functioning and hopes to continue to bend its efforts.

It is interesting to note that our present saturation is probably not over 5 per cent of the potential market of 15,000,000 homes that do not enjoy a modern fuel. Our field is thus practically unlimited and our present 225,000 customers or so are only a beginning on the millions of users we should be serving.

The association will try to draw on successful plans in different parts of the country and from varying types of distributing companies and make available such data, so that other members will have a large fund of information to draw from for their own use, regardless of whether it is relative to sales, operations, corporate structure or other subjects of interest, and will thus be assisted in reaching the enormous profitable market that lies at their feet.

An invitation is extended to all bottled gas marketers to become members of the association and to participate in its activities and benefits.

Higher B. t. u. Butane-Air Recommended by Bureau

OPERATORS of butane-air systems will find interest in Circular No. 405, issued by the National Bureau of Standards. This circular, entitled "Standards for Gas Service," contains a section on standards of heating value for butane-air gas, which recommends the supplying of butane-air mixtures of at least 1000 B.t.u., and preferably somewhat higher.

The circular offers the opinion that the principal factor which has led to the present 500 to 550 B.t.u. standards of service is not a technical one but rather proceeds from a belief that "the customer will be satisfied only if a large number of cubic feet is registered in supplying his fuel needs so that the 'rate' (per 1000 cubic feet) will not appear disproportionately high with that paid in another community, or in the same community at a different time, for gas made by another process." The National Bureau of Standards does not favor this line of reasoning.

So far as concerns technical reasons for low B.t.u. butane-air standards, the circular dismisses the problem of condensation in dis-

tribution system and holders rather lightly—more so perhaps than gas engineers in the industry would be prone to do. The circular states that butane will condense from a 1050 B.t.u. mixture in a low pressure distributing system at a temperature of about —24 degrees F., which temperature is "not likely to occur in mains with even the lightest covering of earth necessary for mechanical protection in any part of the United States."

Probable condensation of butane is a determining factor in the selection of heating value less than 1050 B.t.u., according to the circular, only when the gas is stored in exposed holders. After a brief discussion of low pressure and high pressure storage considerations the statement is made that a butane plant can operate without any storage at all though some storage is desirable to permit repairs of equipment and avoid the need for continuous attendance. It is stated that mixtures may be operated continuously through periods of extremely cold weather. It is further held that "in the coldest climate the greater capacity of the holder to render service with the 1050 B.t.u. mixture during all but a few days, and the greater capacity of the distributing system at all times, will ordinarily make it more economical to house the holder so that it can be kept at a temperature of 0 degrees F. or above rather than to distribute the 525 B.t.u. mixture.

Fire Protection Ass'n May Meeting

The National Fire Protection Association will hold its annual meeting in Atlanta, Ga., May 13-16.

KEROTEST
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FORGED BRASS
VALVES,
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and FITTINGS
for
PROPANE
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Write for descriptive circular

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Reproduction of catalogue pages showing unique method of laboratory photography employed.

Cross-Section Photos Illustrate New Regulator Development

The streamlined flow of gas through the new Reliance Type "P" high pressure gas regulator is graphically illustrated with cross-section photographs in a bulletin published by Reliance Regulator Corp., division of American Meter Co.

Direct comparison with the flow characteristics of conventional high pressure regulators is made possible by photographing the action of a fluid within both types of regulators, in each of four valve positions from "slightly open" to "wide open."

Advantages claimed for the new Reliance Type "P" regulator are that its design minimizes the scouring, turbulent action of the gas on the valve mechanism, makes available a more constant uniformity of regulation, increases capacity and saves in installation and upkeep costs.

Bulletins Nos. 32 and 34, featuring this new regulating principle may be obtained by writing either American Meter Co., 60 East 42nd St., New York City, or Reliance Regulator Corp., 1000 Meridian Ave., Alhambra, Calif. Sales service west of the Rockies is handled by the Reliance Corp. and east of the Rockies by American Meter Co. factories and sales offices.

Vernon Ross Transferred to Yreka Nat. Gas Corp. Property

Natural Gas Corp. of California announces the appointment of Vernon Ross, formerly of the company's El Centro district, as full time representative in charge of all sales and service work at Yreka, Calif.

J. R. McDonald, representative for the company at Dunsmuir, who has had the Yreka District also under his supervision for the past year, will devote his entire time to the Dunsmuir property.

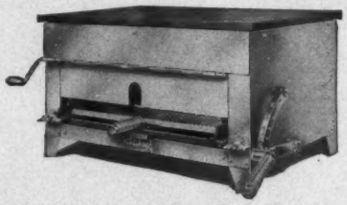
Interior Dept. Jurisdiction Challenged in Pipe Line Hearing

Counsel for the Montana-Dakota Utilities Co. at a rate hearing held in March by the Department of the Interior at Billings, Mont., raised a legal question which may assume widespread importance. Rates in question pertained to the pipe line from the Baker-Glendive field to the Black Hills of South Dakota, which passes over public domain, and therefore under federal statute is required to operate as a common carrier. The Department of the Interior called the hearing upon the theory that the Secretary of the Interior has the right inferentially under the federal statute, to regulate the line and establish rates for it.

At the conclusion of the hearing counsel for the utility made a motion to dismiss proceedings upon the grounds that the Secretary of the Interior did not possess authority to promulgate or regulate rates. The record of the hearing, occupying over 1,000 pages, will go to Washington for further action.

New Features for Hotzone Broiler Line

The Welsbach Co., Gloucester City, N. J., has announced additional models and improvements to its line of Hotzone broiler griddles, that feature a grease grooved griddle top and a lever operated heavy adjust-



able broiler rack. All Hotzone broiler griddles are equipped with the Welsbach patented infra-red ray burner. Roasting covers are available for all models, thus making it a general utility appliance which can be utilized as fryer, broiler and roaster. The complete line is available in one, two, and three-section sizes.

Galesburg Supply Supplemented

The Veeder Supply and Development Co., Cherryvale, Kan., is supplementing natural gas supplies for its Galesburg, Kan., distribution system with the development of three new gas wells 4 miles east of Galesburg.

N. J. Operator Changes Address

Natural Gas Co. of New Jersey, distributors of bottled gas in the southern portion of the state, has moved from its former address to White Horse Pike and Eggharbor Road, Hammonton, N. J.

2nd Edition, Handbook of Butane-Propane Gases, Being Distributed

THE Handbook of Butane-Propane Gases, Second Edition, came from the press last month and mailings have been made to fill advance orders.

Contents of the Second Edition are covered in detail on Page 34 of this issue. Numerous subjects not covered in the original edition—such as use of liquefied petroleum gases in internal combustion engines, manufacture from refinery gases, competitive position of butane-propane—are included in the new volume, which is approximately 400 pages in length with 122 tables and 223 illustrations.

The Handbook is published by *Western Gas*, 810 South Spring St., Los Angeles, Calif., and is sold for $5 a copy.

Long-Term Sales Plan

(Continued from Page 13)

tracts, and other forms to be used incidental to participation in this program.

(16) "Letter of Procedure" is attached for your guidance in the procedure to be followed in forwarding your contracts for gas company financing. Strict adherence to this procedure will greatly facilitate payments to the Dealers.

(17) Each gas company reserves the right to refuse to accept any contract from any Dealer.

This program will continue in effect until further notice, and may be altered or modified from time to time.

ROUTINE PROCEDURE

Features of the above plan are identical for all of the three companies, but each company is working out its own procedure for handling of contracts and inter-department routine involved. Main steps involved are these:

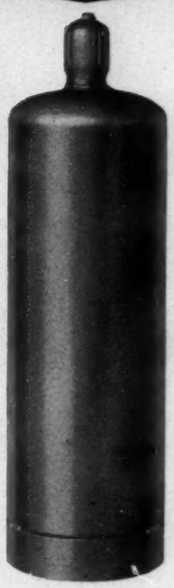
1. On receipt of contracts from dealers all computations and other information entered thereon must be checked, and credit of the purchaser investigated.

2. If the contract is satisfactory on these counts, the dealer must be notified of its acceptance (subject to satisfactory installation), and a post card notification is being used, which also serves as a receipt for the contract.

3. The distribution department must be given information pertaining to the installation, so that a call may be made and the installation reported upon.

Application of the program described above is confidently expected to stimulate sale of high quality gas ranges and automatic water heaters in an unprecedented way for this area. Last year in the same section a special selling offer, without the long-term inducement resulted in a combined dealer and company sale of some 13,000 clock-controlled gas ranges in a two-month period. For both dealer and gas company sales the present plan removes the largest element of buyer resistance—large initial and monthly payments—and extends essential financing aid which should stimulate dealer selling in a way that nothing else could do.

THE OVERWHELMING FAVORITE



There must be a reason why Hackney Liquefied Petroleum Gas Cylinders outnumber all others in service *combined* by two to one.

There must be a reason why such blue ribbon firms as: Shell, Standard, Phillips, Hope, Skelly—choose Hackney cylinders.

There is a reason. It is the efficient design and faultless workmanship of Hackney cylinders. Hackney has built them ever since Butane, Propane and Butane-Propane mixtures were first developed.

PRESSED STEEL TANK COMPANY

208 S. La Salle St. Bldg. Room 1185 CHICAGO, ILL.
6633 Greenfield Ave. MILWAUKEE, WIS.

Hackney MILWAUKEE

1363 Vanderbilt Concourse Bldg. NEW YORK, N. Y.
666 Roosevelt Bldg. LOS ANGELES, CALIF.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

W. M. Murphy on Pacific Coast For Air Reduction Sales

W. Mike Murphy, representing the pipe line engineering division of the Air Reduction Sales Co. of New York City, has been on the Pacific Coast for the past month, doing research work for his division. He arrived in February and expected to return to headquarters the latter part of March.

E. J. Hudson to Represent Fluor; Improved Muffler Announced

P. E. Fluor, vice-president and general manager of the Fluor Corp., Los Angeles, has announced the appointment of E. J. Hudson of Houston, Texas, to represent the company in Texas, Louisiana and Arkansas. Several additional appointments of representatives are contemplated during 1935, according to Mr. Fluor.

The company has recently introduced an improved type of air cooled muffler which induces the air from outside the compressor building rather than picking it up on the floor of the building near the compressor unit.

Lone Star Earnings Bettered

In a preliminary financial statement issued early in March, Lone Star Gas Corp. estimates a surplus for the calendar year 1934 of $3,161,948 available for common stock, equal to 59 cents a share, as compared with a surplus of $2,837,818 or 53 cents per common share in 1933.

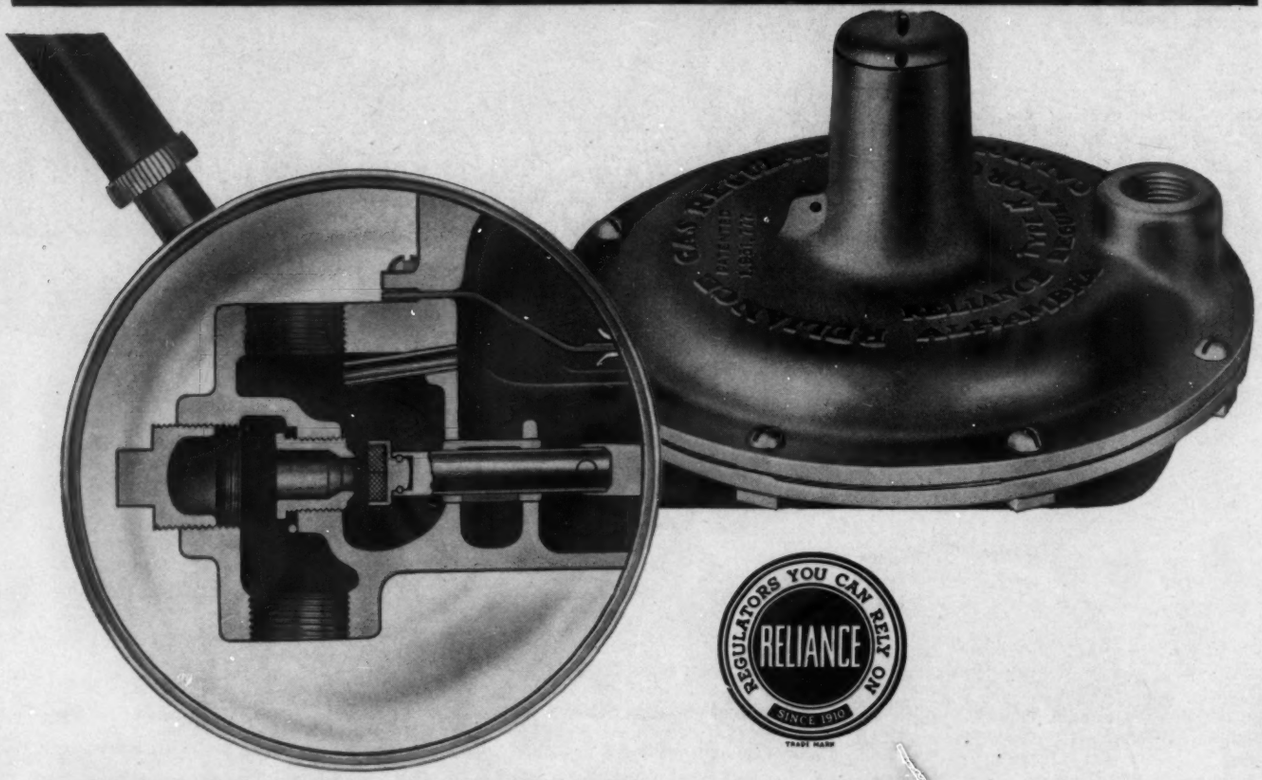
Portland Range Drive On

Portland Gas and Coke Co. is engaged in a gas range sales campaign beginning in April and extending through May, with a quota of 1000 ranges, according to B. H. Parkinson, commercial manager. The Oregon Gas Appliance Society, of which J. King Byron is managing director, is cooperating with the gas company, and the latter is offering a list of prizes for dealers in its territory.

Las Cruces Asks P.W.A. Loan

Las Cruces, N. Mex., has applied to the Public Works Administration for a loan of $195,000 for the development of a natural gas supply and the construction of a distribution system for the city.

RELIANCE REGULATORS



Maintain Uniform Pressures

with satisfactory regulator service at all times, at minimum expense and you cannot be wrong in using either a Type H or Type K Reliance Regulator. They maintain uniform delivery pressures at normal rates of flow, and have an exceedingly low lock-up.

Types H and K Regulators are made in spring-loaded or dead-weight types, with or without a mercury seal. Valve and valve seats are easily accessible for inspection and replacement through the hand-hole.

Expansion pressures do not affect the diaphragm operation. The toggle action permits a longer and more powerful thrust to be exerted on the valve seats. Straight coil adjusting springs insure any outlet pressure desired between 3 inches and 14 inches water pressure and adjustments for changing pressures are readily made.

The Reliance Organization manufactures a complete line of industrial, domestic and district regulators. Write for detailed illustrated bulletins describing the complete line.

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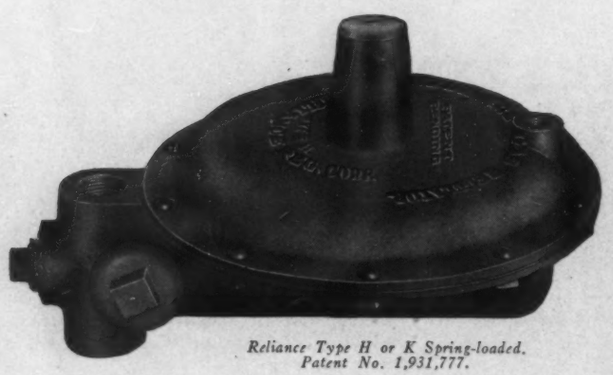
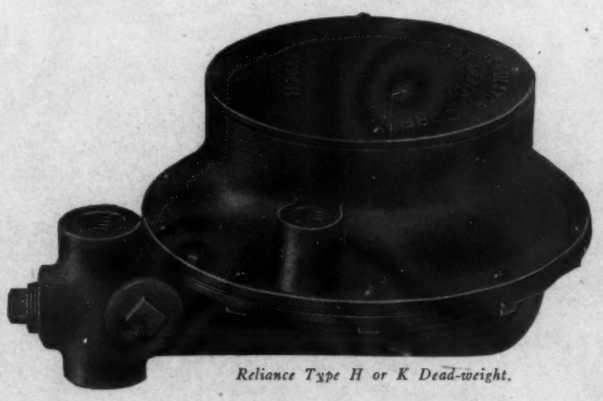
Regulators for Manufactured, Natural and Butane-air gases.



Reliance Type H or K Spring-loaded. Patent No. 1,931,777.



Reliance Type H or K Dead-weight.

MEASUREMENT and CONTROL

Measurement of Spray Water Volumes at Cooling Towers by Means of the Pitot Tube

By J. B. REDDICK
and CHAS. F. BRISCOE
*Southern California Gas Company**

IN ORDER to check cooling tower performance at its various plants and obtain data on their efficiency, the Southern California Gas Co. recently had occasion to develop a portable measuring device for obtaining reasonably accurate water measurements.

Heretofore, quantities of water circulated were estimated from pump discharges as shown by the pump discharge curves. When the discharge was split into two or more lines this method was of little value except to give the total amount being discharged by the pump.

The writers were requested by B. M. Laulhere, engineering supervisor of the Southern California Gas Co., to investigate the feasibility of designing a Pitot tube which could be made up in our own shops and for which we would set up calibration equipment. Before describing the tube and the calibration plant which were developed, a few words as to the origin of the Pitot tube and the theory underlying its use may be in place.

The Pitot tube was originated by Pitot, a French investigator, from whom the name of the tube was derived. It was merely a glass tube bent in an "L" as shown in Fig. 1, and was used for measuring the velocity heads in open channels. The velocity of the water was then calculated from the formula $v = \sqrt{2gh}$. The cross sectional area of the channel being known, the discharge could then be computed.

Considerable trouble was encountered in obtaining accurate measurements between the stream surface and the water level in the tube. Darcy, an eminent investigator in the realm of hydraulics, improved the tube by adding a second glass tube pointing in the same direction but with the orifice closed. Lateral openings were made in this second tube and each leg was connected to an inverted "U" tube with a pet cock at its apex. A partial vacuum was drawn in the "U" tube through the pet cock. The water then rose in the columns to different heights and this second tube was a measure of the static head. This device had to be calibrated on account of the suction effect at the lateral openings; yet incorporated therein were all the fundamental principles of the Pitot tube of today.

Any liquid flowing in a pipe always contains kinetic energy and usually potential energy also. The kinetic energy may be expressed as the head or pressure required to impart to the liquid the velocity at which it is traveling, and is called the velocity head. The potential energy may be expressed as the effective or working head at any point, and is called the static head.

If the pipe line is tapped on its side and a vertical tube attached thereto, the water will rise in this column to a height equal to the static head, provided there is no suction effect at the orifice where the tap cuts the inner pipe wall. This is a measure of the potential energy in the flowing liquid.

If an "L" shaped tube is placed in the pipe with the orifice facing upstream, the water will rise in this column to a greater height than it does in the static head column. This is caused by the impact due to the velocity of the moving liquid in addition to the effect of the static head and is equal to the potential energy plus the kinetic energy.

Hence the difference between the two heads is the kinetic energy or the velocity head. In other words, this difference is the head required to produce the velocity in the flowing liquid.

The law for a freely falling body is expressed by the formula $v = \sqrt{2gh}$, where v = velocity; g = gravity = 32.16 pounds; and h = the height through which the body has fallen. The same formula is applied in calculating the velocity of the flowing stream wherein h = the velocity head in feet as measured by the two tubes. This is the basic theory of the Pitot tube, the accuracy of which has been verified experimentally many times and is illustrated by Fig. 2.

If the "L" shaped tube is placed with the orifice facing downstream, the water will not rise as high as the level in the static tube. This shows the effect of a force acting in a direction opposite to the static head. This force is created by a suction effect due to the tendency of the flowing liquid to pull a vacuum as it draws away from the downstream orifice.

This suction effect is indeterminate in a general way but can easily be calculated for any one Pitot tube after the tube has been calibrated. In our tests, this suction effect has been found to be almost equal to the velocity head, varying from 80 per cent to 95 per cent except at extremely low flows, and depending on the velocity.

It is seen therefore that any Pitot tube depending upon any means for determining the static head other than its actual measurement, as shown by Fig. 2, must be calibrated. Furthermore, as the head produced in the upstream tube, variously called the kinetic, dynamic or impact tube, has been proven dependable, it is evident that the accurate determination of the static head is of first importance.

It is not always convenient or practicable to install a piezometer ring for static head determination and therefore the calibrated Pitot tube is necessary. Fig. 3 shows the head of a type of Pitot tube of this character and it is the design adopted for our work. Fig. 4 shows a complete assembly of the Pitot tube constructed in our shops.

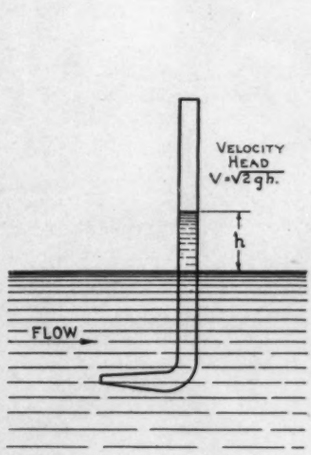


FIG. 1.
Original Pitot tube.

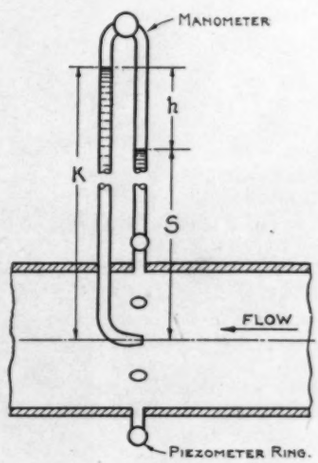


FIG. 2.
Pitot tube with piezometer ring.

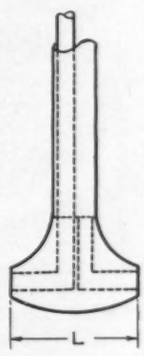


FIG. 3.
Pitot tube head.

* *Presented before the Southern California Meter Association, December 13, 1934.*

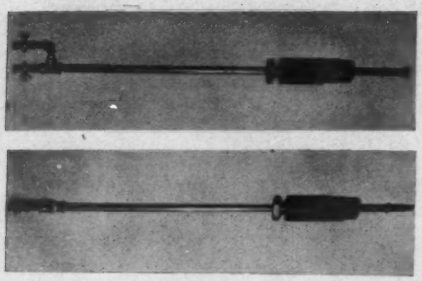


FIG. 4. Complete assembly of pitot tube.

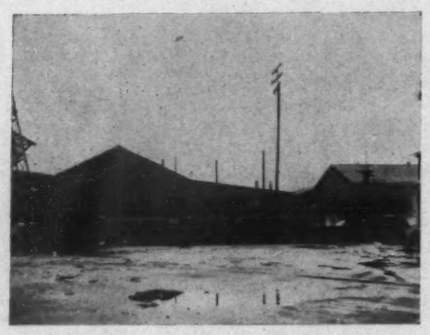


FIG. 5. General view of calibration setup.

FIG. 6. View of tank taken when discharge over weir was at rate of about 2,000 g.p.m.

As has been pointed out, it was necessary to calibrate the tube and a suitable setup had to be designed and built for this purpose. The water for the calibration work was furnished by steam-turbine-driven centrifugal pumps located in one of our engine rooms. The water was drawn from and returned to our storage tank and there was therefore no water loss. The temperature of the water was about 70° F.

It was decided to calibrate the tube against the discharge over a V-notch weir. This type of weir was selected on account of its higher accuracy in the region of small discharges and the considerable range of heads which had to be covered.

Formulae for the discharge of water over weirs have been made up from experimental data. Therefore, in selecting any discharge formula, its accuracy may be materially affected if the experimental weir conditions have not been reproduced within reasonable limits. For instance, experiments in which a steel plate was used for a weir have demonstrated that if the plate is roughened on the upstream surface by sanding or other means, the discharge is appreciably increased. Also the depth of channel below crest of weir, width of channel on each side of weir and velocity of approach all have a bearing on its discharge.

For this reason it was decided to check the calculated discharge over the weir against a standard water meter. This was done with a 6-inch meter and it was found that the discharge as shown by the meter was less than the calculated flow over the weir, varying from 6¾ per cent at 250 g.p.m. to 3 per cent at 1,500 g.p.m. A new discharge curve was drawn for the weir but no attempt was made to reduce it to the formula form. The test data were plotted against the calculated curve and the new points being quite uniform, a curve was drawn through them.

The formula used for the calculated curve was that recommended by Professor Horace King, professor of hydraulics at the University of Michigan. It is, without velocity of approach:

$$Q = 2.52\,H^{2.47}$$

Fig. 5 shows a general view of the calibration setup.

The tank is 10 by 9 by 4 feet deep. The V-notch is cut from a 48- by 27-inch steel plate ¼ inch thick. It is 36 inches wide at the top and 18 inches deep. The angle of the "V" is 90° and the downstream side of the "V" is beveled to give a ⅛-inch width along the contact edge.

With a head of 16 inches of water the flow is closely 2,300 g.p.m. The measurement of the depth of water over the crest of the weir is an extremely important function when calculating the discharge.

For measuring the head on the weir a water column was attached to the outside of the tank. This column was connected to a pipe which led to the center of the tank at a point 3½ feet back from the weir. The elevation of the "V" was carefully transferred to the water column in order to obtain a base at point of no flow. Therefore the head on the weir is the head as measured at a point 3½ feet upstream from the crest.

Baffles were installed in the tank to reduce turbulence and velocity of approach.

Fig. 6 shows almost a plan view of the tank at a time when the discharge over the weir was about 2,000 g.p.m. At this rate of flow any wave action due to turbulence or wind is about at a maximum. It was found that the water column would fluctuate approximately ½ to ¾ of an inch and it was quite easy to obtain an accurate reading.

We now come to the actual calibration of the Pitot tube. The tubes were tested in two positions in the 8-inch pipe line shown in Fig. 5. One was located 6 diameters or 4 feet upstream from the 45° ell and the other 16½ diameter or 11 feet downstream from the 8- by 6-inch swedge. When water is being measured it is recommended by authorities that Pitot tube taps be located not less than 15 diameters downstream from a fitting. The position upstream from the ell was for experimental purposes only.

The Pitot tube was connected with hose and piping to a 50-inch water column or manometer. A differential gauge from which the check valves had been removed was also tried.

At first considerable trouble was experienced with air bubbles gathering at the peaks in the connecting lines. This difficulty was eliminated by placing cocks at the peaks whereby the air could be removed. While this was successful, yet the cocks, especially the one on the static or downstream tube, needed constant attention. Later the manometers were mounted on poles above the tubes as shown in Fig. 5; peaks between the tube and manometer were thus eliminated and all air troubles ceased.

The use of the differential gauge for calibration work was abandoned, although it will no doubt be found useful in the field for close approximations. It was necessary to obtain closer readings than were possible on the gauge and therefore the manometer was used for all calibration work. Readings were taken on the manometer varying from .42 to

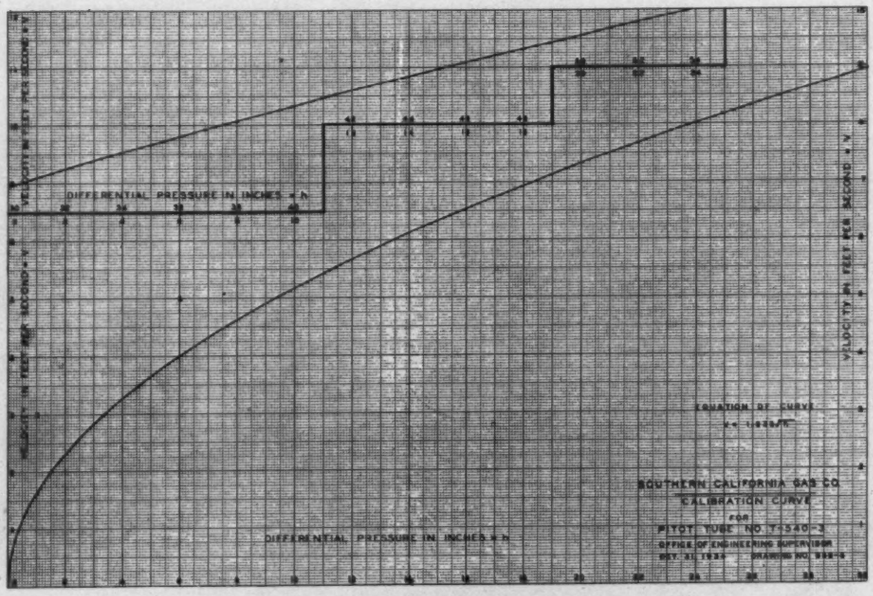

DIFFERENTIAL PRESSURE IN INCHES = h
VELOCITY IN FEET PER SECOND = V
SOUTHERN CALIFORNIA GAS CO.
CALIBRATION CURVE
FOR
PITOT TUBE NO. T-540-3
OFFICE OF ENGINEERING SUPERVISOR

FIG. 7. Calibration curve for one of the Pitot tubes. Similar curves are prepared for each tube.

40.9 inches. The range of flows was from 228 g.p.m. at a velocity of 1.44 feet per second to 1,700 g.p.m. at a velocity of 10.78 feet per second.

It has been proven by experimenters that when the velocity of flow is symetrically distributed, through a cross-section of the stream that the maximum velocity is at the center. It has also been shown that the average velocity of flow is from 83 per cent to 85 per cent of the maximum velocity.

When calibrating a Pitot tube, which may be called a velocity meter, it is only necessary to place the tube in one position in the pipe if the relation of average to maximum velocity is known. In our work to date three tubes have been calibrated in the center position against a known average flow and then sent directly into the field in order to satisfy the urgent need for obtaining measurements.

Two more tubes are in the process of calibration and the velocities in the pipe will be measured in different positions across the section; this is called traversing. When this is done the numerical relation between the center and average velocity for our test setup will be obtained.

When calibrating a tube, an entire range of readings from maximum to minimum within the capacity of the manometer was taken twice. The readings were spotted so that there would be about 10 readings distributed through one range. Then a few random check readings were made or any questionable readings repeated.

Having the differentials and corresponding average velocities, the points were plotted on logarithmic paper. Invariably these points fell upon or very near a straight line. The equation of the curve was then calculated and re-plotted on cross-section paper.

Fig. 7 is a calibration curve for a particular tube. Each tube is accompanied by a similar curve when sent into the field for use. The general form of the equation is always

$$v = c \times h^{1/n}$$

in which v = velocity; h = differential; and c = a constant for any one tube; c varied from 1.52 to 1.64 and n from .49 to .54 for different tubes.

Fig. 8 shows one of our installations. This is the first tube calibrated. It has been in operation about three months and was installed at a new plant where all piping and pumps are new. The discharge line is overhead and the Pitot tube is in the bottom of the pipe. This makes possible an ideal installation as all air troubles are eliminated.

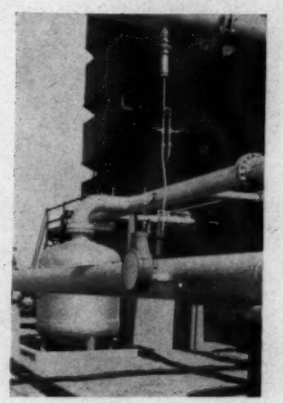


FIG. 8. Installation of Pitot tube; discharge line is overhead, and Pitot tube is in bottom of pipe.

During the time this tube has been installed the differentials have been recorded continuously on a differential gauge chart. At intervals the r.p.m. of the pumps have been noted and the discharge as shown by the pump curve checked against the flow indicated by the Pitot tube. These have been checked to within 5 per cent during the last three months.

Two more tubes have been sent into the field recently. To date there have been no specific returns as to what they are accomplishing. However, at one of our plants an attempt was made to measure the flow of certain lines through V-notch weirs. These weirs were checked with the Pitot tube and agreed to within 7 per cent, which may be due partly to the applicability of the weir formula to the design used.

Orifice Meter Committee for Three Associations

FOLLOWING discussions of changes in orifice meter measurement procedure, at March meetings of the Pacific Coast Gas Association, Southern California Meter Association, and the California Natural Gasoline Association, a decision was reached to appoint a joint committee to make recommendations on future meter procedure. The joint committee will survey the new data developed in the A.G.A.-A.S.M.E. research work and make recommendations for utilizing them to best advantage for Pacific Coast conditions.

F. A. Hough, Southern Counties Gas Co., and P. E. Beckman, Pacific Gas and Electric Co., will represent the Pacific Coast Gas Association on the joint orifice meter committee. Southern California Meter Association will be represented by C. B. Heartwell, Standard Gasoline Co., and B. G. Williams, Southern California Gas Co.; and the California Natural Gasoline Association by P. W. Hill, General Petroleum Corp. of California, and W. L. Cowan, Union Oil Co. of California. Mr. Hough is serving as chairman of the joint committee.

A. R. Bailey, chairman of the P.C.G.A. Technical Section, has appointed a separate committee to make recommendations on future meter procedure, consisting of the following:

F. A. Hough, Southern Counties Gas Co. (Chairman).
Hartwick Barnes, San Diego Consolidated Gas & Electric Co.
P. E. Beckman, Pacific Gas and Electric Co.
M. J. Cereghino, Los Angeles Gas and Electric Corp.
E. H. Fisher, Coast Industrial Gas Co.
T. K. M. Smith, Industrial Fuel Supply Co.
J. E. Spelce, California Railroad Commission.
B. G. Williams, Southern California Gas Co.

Meetings of both the P. C. G. A. committee and the joint committee of the three associations were held on March 28 in Los Angeles.

11th Measurement Course Due at Norman This Month

SOUTHWESTERN Gas Measurement Short Course takes up its 11th annual session at the University of Oklahoma, Norman, Okla., April 23-25. Program features provide for fundamental and practical instruction in measurement procedure and equipment. Measurement by orifice or flow meters and by positive displacement meters is given equal attention.

As in previous years, representatives of manufacturers will have an important place on the program in explanation of their respective apparatus.

An unusually important feature is to be contributed by Harold S. Bean of the U. S. Bureau of Standards, who has been allotted several lecture periods to go into the physics of orifice meter coefficients. J. E. Overbeck of the Columbia Engineering Co. will assist Mr. Bean.

D. C. Williams is chairman of the general committee of the 11th Annual Short Course. The Course is conducted by the College of Engineering, University of Oklahoma, assisted by the Oklahoma Utilities Association, A. G. A. Natural Gas Department, Natural Gasoline Association of America, and the Corporation Commission of Oklahoma.

To encourage those in attendance to get maximum value from the sessions, the Short Course committee is giving seven prizes for the best reports turned in on "What I learned at the Meter School," first and second prizes being $15 and $10 respectively, with five prizes of $5 each.

California Fuel Oil Price Gain

The sale price of fuel oil at California refinery points increased 10 cents per barrel effective March 15.

Texas Co. Sponsors S.C.M.A. Program for March Meeting

A PAPER on "Water Vapor Determination" by L. E. Woodruff featured the program of the Southern California Meter Association, held following dinner at the Lakewood Country Club near Long Beach, March 22nd. The meeting was sponsored by the Texas Co., with J. A. Smith introducing the program features. Following the paper by Mr. Woodruff a series of motion picture short subjects were shown by Paul Davis of the Texaco Sales Department.

The next meeting of the S. C. M. A., to be held at the Lakewood Country Club on April 25, will be sponsored by the Standard Gasoline Co.

Portland Restaurant Campaign

A special commercial sales campaign on restaurant equipment has been launched by the Portland Gas and Coke Co., under the supervision of A. O. Leech, supervisor of the industrial sales division.

THEY *shared a room (and confidences) at college. What more natural than this intimate scene, as Anne, now a devoted mother and home-maker, seeks advice from the famous Home Economics authority, her girlhood chum?*

"Officially, I COULDN'T SAY THIS

. . . but between ourselves, Anne, as friend to friend—

"In my articles and lectures, I must be impartial of course. But, confidentially, Anne, if I were buying a new range for my own kitchen, two advantages alone (not to mention others) would make me choose a *gas* range:

"First, *speed.* Gas is the only fuel that reaches full heat instantly. You never have to wait for burners to heat up; and what an advantage that is, especially at breakfast!

"Second, *economy.* A good gas range costs less to buy and install, and your monthly fuel bills are so much lower. By all means, my dear, choose gas."

• • •

Have you inspected the new, 1935 gas ranges? They are as different from the models of a few years ago as the new automobiles from their predecessors of 1929! Review these brilliant new features:

Smart, modern beauty of line and color . . . table tops for convenience . . . self-lighting burners . . . automatic oven-heat and time-clock control . . . smokeless broilers . . . rust-proof, insulated ovens . . . durable, easy-to-clean enamel and stainless metal finish . . . non-sagging oven trays . . . easy-rolling utensil drawers . . . flood-lamps to *light* your work and compact arrangement to *lighten* it.

See the exciting new models, displayed by your dealer or gas company. Learn how easily you can own one, on the easiest terms ever offered.

Quick Clean Economical
Gas
the modern fuel

For cooking, water heating, house heating, refrigeration . . . appliances for every purse and purpose.

PACIFIC COAST GAS ASSOCIATION, INC.
(A non-profit service organization of which your Gas Company is a member)
447 SUTTER STREET . . . . . SAN FRANCISCO

200,000 COPIES

of this advertisement, influencing 500,000 or more readers of

SUNSET MAGAZINE

in better-class urban and suburban homes of the entire Pacific Coast from Canada to Mexico, are at work during April helping to sell more

GAS RANGES

for the benefit of all MANUFACTURERS, DEALERS and GAS COMPANIES.

Prepared by the Cooperative Advertising Committee (Publicity and Advertising Section) of the Pacific Coast Gas Association.

COOPERATIVE LOAD-BUILDING

MARCH
Domestic Water Heating

APRIL
Domestic Cooking

With the ASSOCIATIONS

W. B. Head, Jr.

C. A. Breitung

A. F. Potter

Edw. F. McKay

Oklahoma Utilities Association Elects New Officers

W. B. HEAD, Jr., president of the Oklahoma Power and Water Co., Sand Springs, was elected president of the Oklahoma Utilities Association, at its 17th annual convention March 13 at Oklahoma City. C. A. Breitung, Oklahoma manager of the Southwest Gas Utilities Corp., Ada, was elected vice-president, and W. R. Emerson, vice-president, Oklahoma Gas and Electric Co., Oklahoma City, treasurer, for the ensuing year. E. F. McKay continues as manager.

Among the members of the executive board, representing the several Divisions, are C. A. Breitung, Ada, Oklahoma, for the Gas Division, and R. J. Daugherty, director information service department, The Empire Companies, Bartlesville, Okla., for the Public Relations Division.

Division chairmen for the coming year include these:

Gas Division: A. F. Potter, Bartlesville, Okla., manager, Bartlesville Gas Co.

Public Relations Division: G. B. Dunlap, Chickasha, Okla., public relations director, Southwestern Light & Power Co.

Manufacturers Division: A. J. Kerr, Tulsa, Okla., manager, Mid-West Equitable Meter Co.

An outstanding feature of the annual meeting was the vigorous denunciation of the Wheeler-Rayburn bill pending in Congress. A resolution was adopted unanimously at the closing session of the convention condemning this proposed measure in strong terms.

Discussion Forum Marks Spring Sales Conference

SPONSORED jointly by the Commercial and Manufacturers' Sections, the Spring Sales Conference of the Pacific Coast Gas Association took place in Los Angeles on March 14 and 15. Frank Talcott, division sales manager of the Pacific Gas and Electric Co., San Francisco, and general chairman of the Commercial Section, presided at the sessions, assisted by chairman of main committees.

Set up as a "discussion forum," the meeting achieved its purpose of stimulating most of those attending to contribute to the exchange of experience on program topics.

Two luncheons were held in the cafeteria of the Los Angeles Gas and Electric Corp. building, that on Thursday being presided over by Mr. Talcott, and that on Friday by W. M. Jacobs of the Southern California Gas Co., chairman of the Domestic Sales Committee. Clyde H. Potter, Southern Counties Gas Co., handled the luncheon arrangements.

Speakers before the Thursday luncheon included Addison B. Day, A. B. Macbeth, and F. S. Wade, presidents respectively of the Los Angeles Gas and Electric Corp., Southern California Gas Co., and Southern Counties Gas Co. All three of the company heads spoke of the industry's growing dependence upon sales, as well as upon an informed employee body.

Wm. Moeller, Jr., this year's P. C. G. A. president, briefly addressed the Thursday luncheon on the subject of sales and service cooperation, following which H. M. Crawford, general sales manager for the Pacific Gas and Electric Co., gave the main luncheon address. Education of employees for better selling, and the value of auxiliary dealer sales were stressed by Mr. Crawford.

E. W. Ellis of the Southern California Gas Co., brought the meeting to a close with his comments on economic trends which give the industry basic reason for optimism at this time.

Frank H. Bivens, president of the Association for the year 1930, who retired from active work in the industry some time ago, was present at both luncheons and received a hearty ovation.

A number of men active in Association work appeared before the Friday luncheon. LeRoy M. Edwards, general counsel, Los Angeles Gas and Electric Corp., spoke briefly on the course of utility legislation in California. Brief remarks were also made by H. R. Basford and George Egleston, both past presidents of the Association.

ElRoy Payne, vice-president and general manager of Payne Furnace and Supply Co. and chairman of the Association's Manufacturers' Section, brought the luncheon group a message on the possibility for cooperation between gas appliance manufacturers in the

Calendar

April

American Chemical Society — Semi-Annual Meeting, New York, N. Y., April 11-13.

Mid-West Gas Association—30th Annual Convention, Hotel Fontenelle, Omaha, Neb., April 15-17.

Southwestern Gas Measurement Short Course—University of Oklahoma, Norman, Okla., April 23-25.

Missouri Association of Public Utilities—Annual Convention, President Hotel, Kansas City, Mo., April 25-26.

Southern California Meter Association—Long Beach, Calif., April 25.

May

Natural Gasoline Association of America—Annual Convention, Hotel Tulsa, Tulsa, Okla., May 1-3.

A. G. A. Annual Distribution Conference—Cleveland Hotel, Cleveland, Ohio, May 2-4.

A. G. A. Natural Gas Department—Hotel Peabody, Memphis, Tenn., May 6-9.

A. G. A. Joint Conference of the Production and Chemical Committees—Hotel New Yorker, New York, N. Y., May 13-14.

American Institute of Chemical Engineers—Wilmington, Dela., May 13-15.

June

Public Utilities Advertising Association—Chicago, Ill., June 9.

Canadian Gas Association—Annual Convention, Montreal, Quebec, Canada, June 10-11.

American Society of Mechanical Engineers—Semi-Annual Meeting, Hotel Gibson, Cincinnati, Ohio, June 19-21.

Michigan Gas Association—Annual Convention, Grand Rapids, Mich., June 20-22.

American Home Economics Association—Annual Meeting, Chicago, Ill., June 24-28.

August

American Chemical Society — Annual Meeting, San Francisco, Calif., week of August 19.

September

Pacific Coast Gas Association—Annual Convention, Hotel Huntington, Pasadena, Calif., September 17-19.

October

American Gas Association—Atlantic City, N. J., October 14-18.

November

American Petroleum Institute—16th Annual Meeting, Biltmore Hotel, Los Angeles, Calif., November 11-14.

Mid-West Gas School and Conference—Iowa State College, Ames, Iowa.

promotion of all-gas homes, and in the improvement of appliances.

Important aspects of the Tennessee Valley Authority program were covered by F. M. Banks, vice-president of the Southern California Gas Co. Special reference was had to appliance financing terms and policies of the Electric Home and Farm Authority, T. V. A. merchandising branch. Mr. Banks referred to the T. V. A. as the gas industry's "hair shirt friend"—a constant irritation that should keep the industry in mind of the continued need for sales aggressiveness.

Most of the business sessions dealt with topics which will come before the Association again at annual convention time as final reports. A paper by Carl Renz of the Los Angeles Gas and Electric Corp. on utilizing contacts of distribution department employees in sales work, appears in this issue. Another discussion which aroused high interest was that by F. U. Naylor, manager of gas sales for the P. G. and E., on the utilization of market research data. Customer survey work is now a regular part of P. G. and E. salesman routine; the company is benefiting greatly from its "Sales-Service-Survey" program, details of which were related by Mr. Naylor.

W. M. Jacobs, chairman of the Domestic Sales Committee, introduced a group of discussion leaders on domestic sales topics, and a similar plan was followed for the industrial subjects, which were discussed by a number of leaders presented by R. L. Grutzmacher of Natural Gas Equipment, Inc., who is this year's chairman of the Industrial Sales Committee.

Full Program Due at Mid-West Omaha Meeting

C. T. WILLIAMS
President

R. B. SEARING
Secretary

R. B. SEARING, secretary-treasurer of the Mid-West Gas Association, has announced completion of program arrangements for the Association's 1935 annual convention in Omaha, Neb., April 15-17. Hotel Fontenelle has been selected as Convention headquarters.

Because the 1935 convention will be the 30th annual meeting of the Association, the officers and directors have made an earnest effort to make the program an outstanding one. The result, as indicated by the speakers listed below, is a well-rounded, carefully planned series of sessions.

C. T. Williams, Sioux City (Iowa) Gas and Electric Co., president of the Association, will call the convention to order. Col. T. A. Leison, general manager of the Omaha, Neb., Metropolitan Utilities District, will respond to the address of welcome delivered by the honorable Roy N. Towl, mayor of Omaha. Addresses and papers to be presented on the convention program follow:

The Gas Industry—Alexander Forward, managing director, American Gas Association, New York City.

The Natural Gas Industry—Its Progress and Trend—Capt. A. E. Higgins, secretary, A. G. A. Natural Gas Department, Dallas, Texas.

Laboratory Operations and Their Effect on Gas Appliances—R. M. Conner, director of A. G. A. Testing Laboratory, Cleveland, Ohio.

Burning Characteristics of Various Gases and Substitutes—R. B. Harper, Peoples Gas Light & Coke Co., Chicago, Ill.

The Mid-West Gas School and Conference —Robert L. Klar, Des Moines (Iowa) Gas Co.

Use of Natural Gas in Omaha to Carburet Blue Water Gas to 550 B.t.u.—C. D. Robison, Metropolitan Utilities District, Omaha, Neb.

Use of Natural Gas in Minneapolis to Carburet Blue Water Gas to 800 B.t.u.—Lester J. Eck, Minneapolis (Minn.) Gas Light Co.

Conversion of Customer Appliances for Higher B.t.u. Gas—W. E. Steinwedell, The Gas Machinery Co., Cleveland, Ohio.

Characteristics of Natural Gas vs. Manufactured Gas as Relating to Leakage and other Problems of Distribution—R. M. Redding, Lone Star Gas Co., Dallas, Texas.

House heating:

(a) Resume of Program of A. G. A. and Principles of Mass Selling—C. A. Nash, The United Light and Power Engineering and Construction Co., Davenport, Iowa.

(b) The Degree Day and Its Relations to Sales—Sam Whiteman, Sioux Falls Gas Co., Sioux Falls, S. Dak.

(c) Helpful Suggestions In Installation and Temperature Control—R. H. Luscombe, Penn Electric Switch Co., Des Moines, Iowa.

(d) Servicing Problems, Domestic and Industrial—Gene Graff, Northern Natural Gas Co., Omaha, Neb.

The Manufacturer, Utility and Dealer Relations—W. Frank Roberts, Standard Gas Equipment Corp., Baltimore, Md.

Air Conditioning — James C. Patterson, Bryant Heater Co., Cleveland, Ohio.

Flood Lighting—W. M. Blinks, General Gas Light Co., Kalamazoo, Mich.

Cooperative Range Campaign — W. E. Derwent, Geo. D. Roper Corp., Rockford, Ill.

Selling Plans and Methods—Stanley Tabor, Iowa-Nebraska Light & Power Co., Lincoln, Neb.

The Value of Gas Refrigeration Load—C. A. Spiegel, Electrolux Refrigerator Sales Division, Evansville, Ind.

In addition to the above, reports will be submitted to the convention by the following Mid-West Gas Association Section representatives:

Industrial—L. O. Rasmussen, Union Light, Heat and Power Co., Fargo, N. Dak.; Accounting—William N. Porter, Sioux City (Iowa) Gas and Electric Co.; Technical—P. A. Stover, Central States Electric Co., Cedar Rapids, Iowa; Commercial—E. J. Boyer, Minneapolis (Minn.) Gas Light Co.; Manufacturers'—Thomas Bullion, Detroit-Michigan Stove Co.

An elaborate and unusual program of recreation is being organized for "Gas Men's Night Out," scheduled for the evening of April 15, and leading off with a 6:30 P.M. buffet dinner.

Amendments to P.C.G.A. By-Laws Proposed

AT a meeting of the Pacific Coast Gas Association's board of directors held in Los Angeles on March 14, the Board decided to recommend to the Association's membership amendments to the By-laws which will permit making the Publicity and Advertising Section a sub-committee of the Commercial Section and the Public Relations Section a special committee on Education, reporting direct to the President.

In view of these changes it is proposed to change the name of the Commercial Section to the Sales and Advertising Section. The Board will also recommend that the name of the Accounting Section be changed to the Customers and General Accounting Section.

It is felt that these changes will simplify the Association's organization and promote the efficiency of committee work. The need for closer contact between the sales and advertising men has long been apparent. It is felt that the new arrangement will foster this closer cooperation. In changing the status of the Public Relations Section the Board recognizes the fact that public relations is not a thing apart. The new committee on Education will work in all of the Association's sections and will be made largely responsible for the planning of general session convention programs.

These changes will not be made until ratified by the membership at the 1935 Convention.

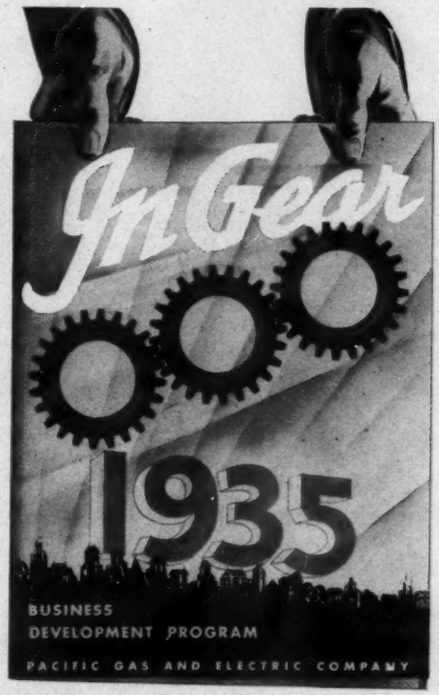
P.C.G.A. 1935 Convention At Pasadena, California

President Wm. Moeller, Jr., announces that the 1935 convention of the Pacific Coast Gas Association will be held at Hotel Huntington, Pasadena, Calif., September 17, 18 and 19. The last convention of the Association at the Huntington was held in 1930 when F. H. Bivens was president. It is one of California's favorite convention spots and not the least of its advantages is its central location in the midst of a large portion of the Association's membership, which assures a record attendance.

The next meeting of the Association will be the Northwest Conference. President Moeller will announce the time and place of this within the next few weeks.

It's off the Press!

Here is a complete, illustrated plan book of 1935 sales promotion in P. G. and E. territory



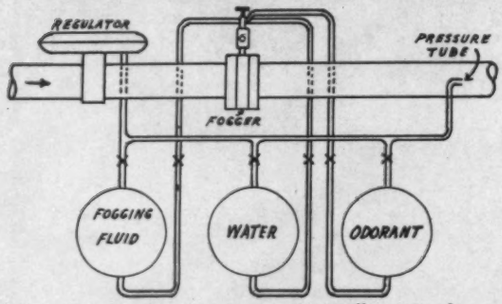
P. G. & E.'s far-flung territory — its cities and towns, its people, its buying power • A vital message from President Hockenbeamer • An analysis of present conditions • "What the Future Holds"— authoritative facts and figures, shrewdly interpreted • The markets for individual appliances • A complete, unequivocal statement of P. G. & E. sales Policy • What the company does and does not sell—and why • Merchandising opportunities in "Half-off on Extra electricity" • A keen appraisal of "Better Light-Better Sight" potentialities • The Gas and Electric Appliance Societies — their accomplishments and objectives • A calendar of 1935 promotional events • A massed parade of P. G. & E. advertising • The "Selling Job for 1935" • "The Mobilization of an Industry" • and in a pocket in the back cover — "Operating Details of the 1935 Business Development Program" — a book you will want to keep at your elbow throughout the coming year • In Gear is the whole story of Gas and Electric Appliance promotion—in advance • The monthly Dealer Bulletin will supply the last-minute details • Together, they constitute a working plan that should keep you profitably busy • "In Gear" and its supplementary manual "Operating Details" will be distributed thru our local offices • Don't merely read them—*use* them! They are your tools.

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

Owned • Operated • Managed by Californians

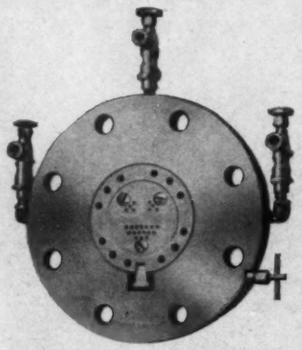
"GASAIR" presents the perfect FOGGER



Low in cost, easy to install, simple, positive in action, automatically controlled. For fogging, humidifying or odorizing.

Principle: The pressure drop incidental to a regulator is taken over a set of atomizing nozzles, rather than the valve of the regulator. The quantity of fogging fluid drawn in is automatically regulated by the load. The "GASAIR" Fogger is simply clamped between two standard pipe flanges. **Price, with pressure tube, on application; but ordinarily, only $10 per inch nominal diameter of pipe.**

For blue-print, full particulars, write



Upstream face of fogger, showing integral by-pass, adjustment of which may be made from outside, controlling pressure-drop and fogging.

UTILITY DEVELOPMENT CO.

5815 THIRD STREET *John K. Heller, President* **SAN FRANCISCO**

Electrogas

FLOOR FURNACES

NEW LOW PRICES

now available on the famous ELECTROGAS FLOOR FURNACES. These prices are the lowest ever offered, and are created to make it especially worth your while to sell Electrogas heating in line with the Federal Government's plan of home modernization.

ALSO AVAILABLE IMPROVED LINES OF "STREAMLINED" BASEMENT FURNACES.

BLOWERS FILTERS AIR WASHERS

BUILT-IN FURNACE—BLOWER—FILTER UNITS

Write for details.

ELECTROGAS FURNACE & MFG. CO.

2575 Bayshore, San Francisco
164 South Central, Los Angeles

To Study Heating Value Determination

It has been known for some time that heating value determination of natural gas made with the Junkers calorimeter under the familiar procedure and constants used with manufactured gas contains rather serious errors. These errors were pointed out by M. A. Richford of the Pacific Gas and Electric Co. in a paper before the Pacific Coast Gas Association late in 1933 (P.C.G.A. Proceedings, Vol. 25, p. 101).

A. R. Bailey, chairman of the Association's Technical Section, has now appointed a committee to go further into the matter in cooperation with the American Petroleum Institute. The Pacific Coast Gas Association committee consists of Guy Corfield, Los Angeles Gas and Electric Corp., chairman; A. B. Allyne, Southern Counties Gas Co.; M. A. Richford, Pacific Gas and Electric Co.; B. G. Williams, Southern California Gas Co. Mr. Williams will act as the contact with the American Petroleum Institute Committee.

Prizes for Data Bulletins

To encourage the submission of data for the preparation and publication of industrial sales data bulletins, the Industrial Sales Committee of the Pacific Coast Gas Association, is offering prizes of $25, $15, $10 and $5, in addition to a three-ring binder and set of all data bulletins published to date, for the four best data bulletins submitted for publication prior to August 1, 1935.

R. L. Grutzmacher, chairman of the Industrial Sales Committee, has announced the membership of his committee to be as follows: K. B. Anderson, Coast Industrial Gas Co.; Chas. Ferry, Southern Counties Gas Co.; Lew Galbraith, Pacific Gas and Electric Co.; J. H. Gumz, Pacific Gas and Electric Co.; D. L. Leahy, Southern Counties Gas Co.; Monty Pfyl, San Joaquin Light and Power Corp.; E. M. de Remer, Southern California Gas Co.; J. S. C. Ross, Pacific Gas and Electric Co.; Murray Schultz, Southern California Gas Co.

Each member of the committee has been assigned a definite study based upon the discussions and progress reports made at the Spring Conference, held last month in Los Angeles.

W. W. Winter Named President Atlanta Gas Light Co.

W. W. Winter, for the past three years vice-president and general manager of the Atlanta (Ga.) Gas Light Co., was named president of the company at the annual stockholders' meeting held in March. He will continue as vice-president and general manager of the group of utilities affiliated with the Atlanta Gas Light Co., operating in Alabama, Georgia and Florida. These include the Georgia Public Utilities Corp., Georgia Natural Gas Corp., Consumers Gas and Coke Co., Macon Gas Co., Valdosta Gas Co., of Georgia; Huntsville Gas Co., Alabama Utilities Service Co., Mobile Gas Co., of Alabama; and Florida Public Utilities Co., in Florida.

Mr. Winter is acting as liaison officer of the American Gas Association for Better Housing activities, and is immediate past president of the Southern Gas Association.

P. G. and E. Rate Cut Held Confiscatory in March Ruling

On March 27 the $2,100,000 reduction in Pacific Gas and Electric Co. natural gas rates, ordered on November 16, 1933 by the California Railroad Commission, was declared confiscatory and in violation of the federal constitution in a decision by H. M. Wright, special Master in Chancery in the federal court. The report holds that the temporary injunction obtained by the P. G. and E. in federal court restraining the Commission's order, should be made permanent.

It was stated in the report that while the Commission aimed at a net return of 6⅔ per cent the return actually allowed would be only 3.89 per cent. In past years a return of 8 per cent in net revenue has been allowed.

New Home Service Director for United Public Service at Beaumont

The United Gas Public Service Co., has appointed Mrs. Eva M. Pender as home service director for the company's Beaumont, Texas, district, according to W. C. Merritt, district manager at Beaumont. Mrs. Pender was formerly home service director for the New Orleans (La.) Public Service Inc., and previously was connected in a similar capacity with the United Public Service Co. office in Chicago, Ill.

Public Relations Audit

(Continued from Page 17)

it was maintained on file in the division office for subsequent inspection. The object of this was to determine later how well these complaints had been adjusted by the division.

If, while conducting the audit in any given territory, the auditors had reason either through observation or complaint to believe that the policies and procedure of the company in the interest of the service to the customer were not adhered to, such deviations were recorded and called to the attention of the division manager. During the entire audit it was necessary, of course, to have the utmost cooperation on the part of the division managers; it being understood that the auditors were members of the general office organization and their activity was largely directed from that point.

Results of Audit

Some of the principal beneficial results might be enumerated as follows:

It afforded an opportunity for the customers to express their feelings regarding the company's service and the general attitude of its local organization to the customer.

It afforded the company an opportunity of informing the customers of the service the company was in a position to render aside from the delivery of gas, electricity, steam, and water. We learned that many of our customers were not informed of the availability of this service.

It also gave us a check upon the effectiveness of our service, whether prompt attention was being given, and the reason for any delay or inattention on the part of our organization. This was of assistance in correcting any defects which were disclosed in our general service plan.

As the result of suggestions made by customers, certain changes were made in the nature of consolidating office functions which resulted in less time consumed in the dispatch of business direct with the customers.

The audit also had a beneficial effect upon our own employees in stimulating them to greater interest together with disciplining them to closer attention. It also afforded the opportunity for making a closer check of the tangible results of the "Contact Employee Training Courses" mentioned elsewhere in this report, which have been so completely conducted by the company.

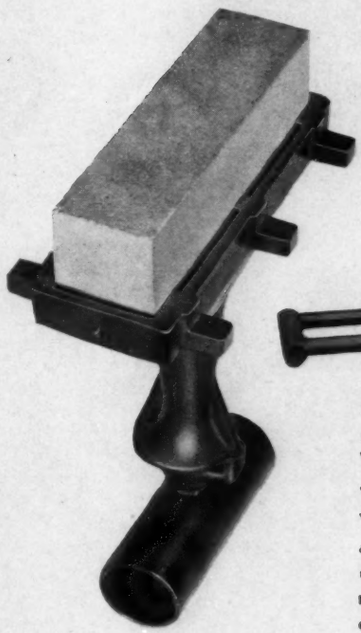
It is the opinion of the executives of the Pacific Gas and Electric Co. that the benefits accruing from this audit were sufficient to justify the continuance of this work during the year 1935.

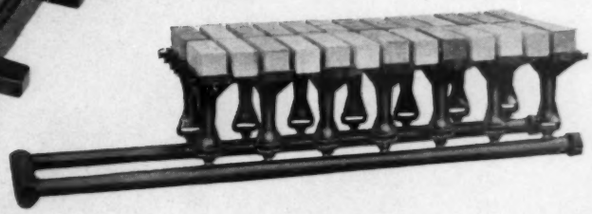
Western Gas Co. of Wash. Adds Bremerton Navy Yard to System

The United States Bureau of Yards and Docks has approved an appropriation amounting to $7,000 for the purchase and installation of service lines which will connect with the distribution system of the Western Gas Co. of Washington, serving Bremerton, Wash. with manufactured gas. The new fuel will be utilized in furnaces and other heating equipment, in the various shops of the navy yard.

This N. G. E. GAS BURNER

Offers Maximum Combustion Efficiency . . . . . .





N. G. E. engineers have capitalized on the principle of radiant heat in their construction of Type 313 Burners. With perfectly controlled radiant heat, full utilization of all heating surfaces is made possible.

You will find Type 313 gives you accelerated combustion and produces heat without flame and of high combustion efficiency. It does this because the gas is burned in a restricted and localized zone set up in the refractory bed of the burner.

The burner proper is a modified Venturi. It operates on the principle of entraining a major part of the air required for combustion by the pressure energy of gas issuing from an orifice into the Venturi throat of the burner. In this way mixture of air and gas occurs in the mixing tube of the burner, and the entire combustion space is available for combustion.

Ruggedly constructed and designed for operation under most severe conditions, the Type 313 has an operating range of from 2" of water to 3 lbs. per square inch. The Type 313 is the ideal upshot or heating boiler burner.

The N. G. E. line includes gas burners, regulators and control equipment for the gas and oil industry.

NATURAL GAS EQUIPMENT INC.

Petroleum Securities Bldg. Los Angeles — **1123 Harrison St. San Francisco** — **Arizona distributors Crane Co.**

LOOK TO THE PIONEERS FOR CONTINUED LEADERSHIP

NEXT MONTH *Fluor Announces a new product and service*

Alton, Illinois 2342 State St.
Houston, Texas 1406 Esperson Bldg.
New York, N. Y. 2020 E. 42nd St.

FLUOR CORPORATION LTD
909 East 59th Street LOS ANGELES, CALIF

Tulsa, Okla. Phil Tower Bldg.
Chicago, Ill. McCormick Bldg.

Selling Against Government Sponsored Competition

(Continued from Page 10)

serves to illustrate the point I am making.

A Proven Market: A recent government survey of 18 cities in this territory shows the following facts: Of the total of 562,361 residences, 273,491 or 48 per cent, used gas for cooking; 247,196 or 44 per cent used neither gas nor electricity. They used wood stoves, coal ranges, gasoline or kerosene ranges. The total number of electric ranges in use in these 18 cities amounted to only 2 per cent of the total number, and of this 2 per cent approximately only half are located where gas is available.

We have made some efforts in the past year or two toward reaching this 44 per cent, which may interest you, and these efforts have been made during the last year in the face of electric rates approved by the Tennessee Valley Authority.

We believed that those among this 44 per cent who were not able to pay the small difference each month between the fuels they were using and gas, were very few. We decided that the difficulty of selling this 44 per cent lay not in the additional cost of gas so much as in the initial layout necessary to purchase gas equipment.

It is one thing for a family to be able to spend say a dollar or two dollars a month for gas instead of a less desirable fuel, and another thing entirely for this family to spend say a hundred dollars for a range, another hundred for a water heater and radiant gas heater, piping, installation, and so forth.

We believed from what we had found, that if we were able to make arrangements to install this equipment—not shoddy, unserviceable appliances, but really good ranges, really good water heaters and other equipment—on terms which would make it possible for these families to pay for it without serious financial sacrifice, or undue curtailment of the family budget, and if we made a serious effort to push these sales, we would find a tremendous potential market for gas service.

Let me say that we were already in a position to take full advantage of the added market which such a plan would open to us. For a number of years we have had an aggressive sales policy. We have advertised the advantages of gas consistently, and successfully. We have an adequate sales force of trained, able men, who know their territories thoroughly. With this set up, here's what we did.

ONE PLAN OF ACTION

We advertised, and began to sell high quality ranges for $1.25 down and $1.25 a month. We rented, or sold, water heaters for $1.00 down, and one dollar a month. We sold radiant heaters for 25 cents down and as little as $1.00 a month. We sold, or rented gas conversion burners for $2.25 down, and $2.25 a month. I say sold or rented; you may call it whatever you please, either sale or rental, because the rental is so arranged that it includes the carrying charges, and when the customer has paid in rental the full price of the appliance it belongs to him.

I also said that we *sold* these appliances, not that we merely offered them for sale. We have spent, and are spending money; we are using plenty of advertising, newspapers, radio, envelope stuffers; we hold parades, we send demonstration trucks with radiant heaters and crews of loudly uniformed salesmen (we call them housewarmers) to every door in Atanta. We got the cooperation of the leading plumbers, who send us prospects; we have done everything we can think of to increase sales and we are still thinking up new ideas.

IT WORKS!

What has happened?

Sales: In 12 months our appliance sales are up 85 per cent. Our total sales and rentals (and most of the rentals are becoming sales) are up 117 per cent in Atlanta alone. Our total gas sales up to the beginning of this winter have increased a half billion cubic feet, and are climbing rapidly. So far as we know, in the fall of 1933, we broke a world's record for the sale of radiant heaters, and we did it again last fall. We are beginning to dig into that market which has been there for us for many years, and while we have replaced a great deal of electrical equipment, not all these sales, nor any considerable proportion of them, have come from the 1 per cent of electrical customers.

Collections: I suppose you would like to know how this plan has affected our collections, how much we have had to write off, and how much we have had to reclaim. Remember that we are in a depression. This has not been a good year for collections. There are about 30,000 people on the relief rolls in Atlanta alone, and this number is increasing. You naturally would expect a moderate increase in collection difficulties.

Well, we haven't had any at all. Our collections are better, by a considerable margin, our write-off has been much less, and our repossessions have been practically nil.

Reclaimed Customers: And listen to this: In common with every other gas company we had a large number of former customers whose accounts for gas service had become delinquent, who had been cut off for nonpayment—old dead services and accounts that we might as well have written off; some in fact, that we had written off. We went to these customers, hundreds of them, and made them a proposition to begin service again, allowing them to pay up their delinquent accounts in small monthly payments, while keeping up their current bill. After a year, we have 60 per cent of these still as good customers, we have collected in bad accounts far more than enough to wipe out the few losses among the other 40 per cent, and as a result of this radical and unortho-

METAL-BESTOS GAS VENT *and* FLUE PIPE

The Superiority of this Aluminum Lined Pipe over all other types of commonly used Gas Vent Pipe has won for it

NATIONAL ACCEPTANCE

■ Trial Installations will prove its Higher Efficiency, Safety, and Lower Installed Cost.

■ Tests Against Deterioration by Heat and Acids Prove an Indefinite Life.

Write for Descriptive Catalogue and Price List

MANUFACTURED BY

PAYNE FURNACE & SUPPLY Co.

BEVERLY HILLS CALIFORNIA

REFRACTORIES

GENERAL CERAMICS COMPANY

· REFRACTORIES ·

For Conversion Burners, Circulating Heaters, etc.

Because they are uniformly accurate, strong, and dependable in every way, General Ceramics Refractories are used by most of the leading manufacturers of gas heating appliances. • Our engineers will gladly cooperate with you.

General Ceramics Company, 30 Rockefeller Plaza, New York

THE DAYTON BAND CLAMP offers a simple and economical, yet very effectual method of permanently sealing small leaks in either welded joints or in the pipe itself.

Inexpensive, easily and rapidly applied, and efficient in use—the Dayton Band Clamp conforms to the same high standard of unfailing service as all other Dayton products.

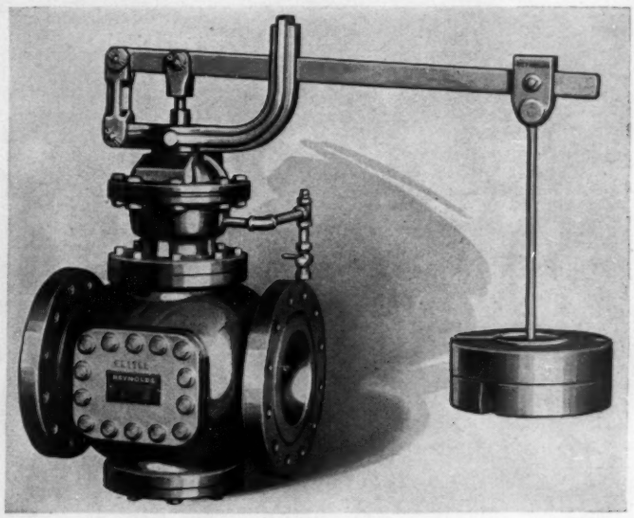
Made in all standard sizes from 2 to 26-inch O. D., including casing sizes.

THE NATIONAL-SUPERIOR CO.
DAYTON PIPE COUPLING DIVISION
DAYTON, OHIO

REYNOLDS
GAS REGULATORS
for every purpose!

As long as there is a need for gas control regulation, just that long will the name, REYNOLDS, be symbolic of dependable, accurate, gas control.

REYNOLDS Gas Regulator Company's more than forty years of leadership is proved by the hundreds of thousands of Reynolds Regulators that still give satisfactory performance after years of service.



REYNOLDS New High Pressure Line Regulator, without auxiliary bowl, features a wider range of delivery pressure control, (21 lbs. to 100 lbs.). In addition, Reynolds build High Pressure Line Regulators with auxiliary bowl where complete lock up is required. Write for details.

Reynolds Branch Offices:
421 Dwight Building
Kansas City, Missouri
2nd Unit, Santa Fe Building
Dallas, Texas

Representatives:
Eastern Appliance Co.,
Boston, Massachusetts
F. E. Newberry
Avon, New Jersey
G. H. Unekefer
428 Boyd St., Los Angeles

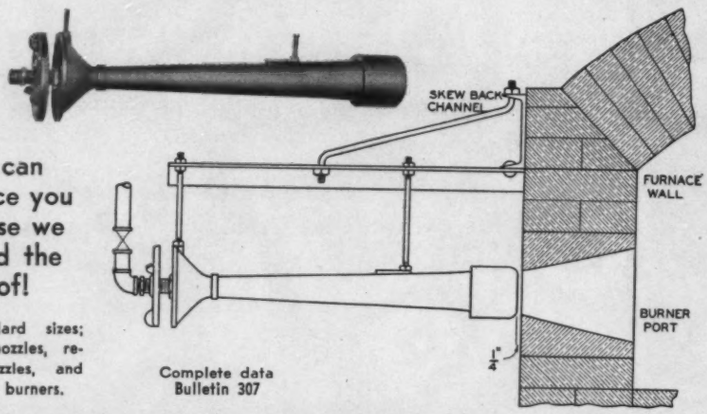
REYNOLDS
GAS REGULATOR COMPANY
Anderson, Indiana, U. S. A.

GAS CONTROL SINCE 1892

D F C Inspirator Burner — Series B

In this and other types, DFC burners meet every industrial need.

Injects all the air required for complete combustion of high heat value Natural gas. Constant air injection ratio and satisfactory operation at pressures from 1/2 to 30 lbs. Positive flame retention at all pressures. Extremely low turn-down without back-firing.



We can convince you because we burned the proof!

Eight standard sizes; cast iron nozzles, refractory nozzles, and two-stage burners.

Complete data Bulletin 307

THE DENVER FIRE CLAY COMPANY

DENVER DFC COLO. U.S.A.

BRANCHES AT SALT LAKE CITY, EL PASO, AND NEW YORK

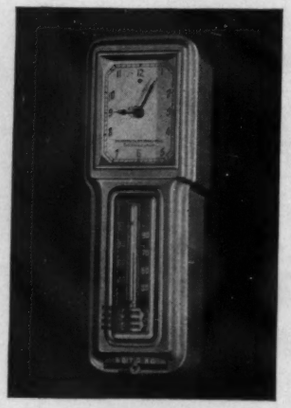
SATISFIED CUSTOMERS

■ Keep your customers satisfied by recommending and installing the Chronotherm*... the greatest achievement in the field of automatic heating. It provides unvarying temperatures and will entirely eliminate "Cold 70°", and save fuel by doing so. Minneapolis-Honeywell Regulator Co., 401 East 28th Street, Minneapolis, Minn.

■

MINNEAPOLIS-HONEYWELL

Control Systems



The Chronotherm*... Provides absolute unvarying temperatures and eliminates "Cold 70°".

* *Formerly called Thermochron.*

The Goodman Stopper

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

GOODMAN USED SINCE 1897 2" HANDLE & LOCKING SLEEVE GAS MAIN STOPPER

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

Pac. Coast Rep.: C. B. Babcock Co.
135 Bluxome Street
San Francisco, California

NRA MEMBER U.S. WE DO OUR PART

dox experiment of ours, we are several thousand additional excellent customers, and several thousand dollars to the good.

Of course, our Credit Department has been busy. It has done a good job, and an important one. Just like every other department, it has really had to go to work, to keep up with the procession. And it has succeeded.

The immediate and obvious objection to a plan of this sort is that it required a considerable amount of financing, and financing that we have not been accustomed to arrange for. But we arranged this financing with no particular difficulty, and I believe that almost any gas company can do it. It is of course a new idea in gas appliance selling, but I tell you earnestly that we are going to have to get used to a lot of new ideas before this thing is over. When we undertook it we heard many objections to this kind of selling. There were bitter complaints that it was unsound.

As to whether or not it is sound, go into any furniture store in your city and see if they haven't been doing practically the same thing, very successfully, for years. A gas company also has a tremendous advantage over a furniture store, for the appliances we sell on these terms continue to use gas at a profit to us as long as they stay on our mains. The only profit of the furniture store is in the original transaction.

I suppose there are few gas companies who are willing to admit that their rates are too high. Their point of view is that their companies are entitled to a return on their investment, and this is undoubtedly true. I think under the law, and until the law is changed, they have a perfect right to rates high enough to earn them this return. The trouble about it is going to be this. With the kind of competition they are going to have to face, higher rates instead of helping them are going to hurt them. They are in a competitive situation and their rates have got to be competitive, regardless of their rights, and together with competitive rates have got to go competitive and aggressive selling policies. I believe that these are not only essential to the life of gas companies generally, but in the end will prove far more profitable. The gas industry has got to clean house and strip for action. From now on, whether we like it or not, we have got to get out into the field of competitive business and earn our way. If anybody owes us a living, we have to collect it and we have to collect it by harder work than we've ever done before. But I believe that with this hard work, if once we get the idea that we've got to do it and quit depending on anything or anybody else, the gas companies in the face of T.V.A. or any other competition will be more prosperous in the future than they ever have been in the past.

Southern California Gas Adds Arvin

Southern California Gas Co. in March extended service to the town of Arvin and vicinity, bringing natural gas from recently developed supplies adjacent to the Mountain View field near Arvin. Upwards of 200 domestic meters are already in service, and several gas engines and an alfalfa dryer are also being served.

Employee Suggestion Plan

(Continued from Page 16)

Typical of the suggestions that have been turned in this year are the following: Four calls would be eliminated on each new house heating installation by making a change in routine. Another suggestion would provide a saving in the purchasing department in labor and in cost of forms. Another proposes a fixed charge on master meter installations made in connection with conversion jobs. A very definite saving can be established in checking trucking and freight bills to see that they are in line with published tariffs, suggests another. A duplicate handling of orders would be eliminated through another.

Suggestion Department Routine

The evolution of a suggestion and its routine through the Suggestion Department is briefly described by W. O. Hodgdon in the following 30 points:

1. Initial appearance of the suggestion: date and hour of filing with secretary.
2. Suggestion read and analyzed by the secretary.
3. Subject or digest added to suggestion.
4. Copy prepared for cross-index files.
5. Checking the records for duplicate suggestions.
6. Assigning suggestion to a code designation.
7. Unit file for suggestion.
8. Original suggestion typed by the correspondence department.
9. Appointment of reviewing committee on suggestion.
10. Suggestion sent to members of reviewing committee, for report with recommendations.
11. Reports of reviewing committee typed on suggestion form, by the correspondence department.
12. Suggestion, with reports, sent to group representatives, for review and decision.
13. Meeting of the suggestion committee, with action on from 50 to 75 suggestions.
14. Suggestions bulletin posted, listing coupon numbers of all suggestions acted upon, and call issued for filing of identifying coupons.
15. Filing of coupons is followed by a personal letter to suggester, explaining the award.
16. Cash awards paid in new money, and receipts assured.
17. Cash awards lapse in three months, if not claimed.
18. Preliminary cash awards subject to annual audit.
19. Supplemental cash awards for outstanding suggestions.
20. Records closed on cash awards made final.
21. Merit marks are cumulative, and do not lapse.
22. Sketches, forms, and other exhibits, submitted with suggestions.
23. Re-hearings on awards if suggester is not satisfied.
24. Subject slips form a special file.
25. Special bulletins list names of winners.
26. Records of cash award winners kept in employment department.
27. Failure to file coupons the only "missing link."
28. Details of the permanent files.
29. Miscellaneous files and records tie in with the major routines.
30. Annual and special reports, statistics, etc.

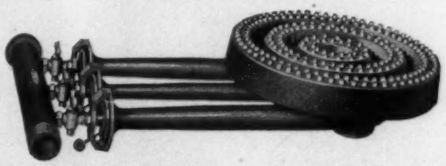
Mono-Cast Doublex Simplex Centrifugal Pipe being installed in the gas distribution system leading to Officers' Quarters at Maxwell Field, Montgomery, Alabama. This pipe makes a permanently bottle-tight joint at any pressure from 0 to 1000 pounds. For literature write American Cast Iron Pipe Co., Birmingham, Ala.

PEERLESS
RADIANT GAS HEATERS

Attractive
Efficient
Economical
Sturdy
Guaranteed

A. G. A. Approved

WRITE FOR DETAILS
PEERLESS MANUFACTURING CORP.
1400 W. ORMSBY
LOUISVILLE, KENTUCKY



Johnson Triple Atmospheric Ring Burners

Johnson 60BCE Ring Burners are long-lasting and efficient. They are made up of three independent burners which may be used singly, in pairs, or in triple. Whatever may be your gas burner problems, write to us for expert recommendations. We build burners to meet each specific need. Send for free catalog.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Western Representative:
C. B. BABCOCK CO.
135 Bluxome Street
San Francisco, Calif.

Eastern Representative:
J. H. McPHERSON
250 Stuart Street
Boston, Mass.

Welsbach
HOTZONE
Self-action storage gas water heaters

Approved by A. G. A. Laboratory
Heaters are made in all domestic sizes with 300 lb. test galvanized or Everdur tank.
Write for Details
WELSBACH COMPANY
Gloucester City, N. J.
SAN FRANCISCO, CALIF. CHICAGO, ILL.

FRASER
Radiant Front Console
Equipped with Fan

Velgrain Finish
The heater that smiles while it warms
Manufactured by
Fraser Furnace Company
Stockton, California
Distributed by
H. R. Basford Company
San Francisco Los Angeles

"Every Employee a Salesman—and Paid for It"

(Continued from Page 11)

friction between the commission salesman and the other employees who do some selling. By giving the employee his award for securing the prospect and the salesman a commission for the actual sale, this friction has been entirely eliminated and cooperation between the two groups has resulted. As an example of this cooperative spirit, in several districts the salesman has offered and paid additional prizes, out of his own pocket, to employees securing the largest number of prospects.

The campaign began on July 1, 1934 and was divided into two contests, the first beginning on July 1 and running for 90 days to September 30. The second contest called the "Cash for Christmas Contest" was begun the next day, on October 1, 1934, and ran for 45 days. During the 135 days of the two contests, the following sales were accomplished by the several companies affiliated with the Southern Union Gas Co. system, having 10,244 directly connected meters at the beginning of contests, June 30th, 1934:

2,354 New Meters Connected
670 Water Heaters Sold
558 Ranges Sold
1,060 Space Heaters Sold
466 Circulators and Floor Furnaces Sold
237 Central Furnace Installation and Conversions

Note: (No points allowed for "reconnects" unless meter had been off line more than six months).

Merchandise sales for the three months period of the first contest (July, August and September) amounted to $85,130.60, an increase of 328 per cent over the same period in the preceding year. The sales for this 3-month period were in excess of those for the entire preceding calendar year. The increase in sales during this period varied from 97 per cent on one company to 7,715 per cent (believe it or not) on another.

During the 45 days of the "Cash for Christmas" Contest, 1,421 new meter connections were reported; this means 31.5 new connections every day. Of this number, 800 were reconnections where the meter had been off the line over six months, and 621 were brand new services.

During the 135 days of this campaign, 4,777 actual personal contacts of customers and prospective customers were made by the employees of the company for the purpose of selling gas as a fuel, and modern gas appliances.

Summarizing the above figures, it is found that through the coordinated efforts of the employees during the 5½ months, the following sales were made:

1 Water Heater for Each 16 Connected Meters
1 Range for Each 19 Connected Meters
1 Space Heater for Each 10 Connected Meters
1 Circulator or Floor Furnace for Each 23 Connected Meters
1 New Meter for Each 4.8 Connected Meters

It should be mentioned that the above results were accomplished without a sales organization, as such. Only high class A.G.A. approved merchandise was sold and at the regular terms and prices, no big discounts being offered to obtain sales. Proof of this is in the fact that the group (for the first time) showed a profit on its merchandising department for the year 1934.

Grand prizes awarded in the first contest consisted of three trips to the World's Fair, merchandise, and cash. Prizes in the "Cash for Christmas Contest," which closed December 15, were, of course, as the name implied, cash awards, and the checks received by the employees ranged from $1 to $55 in the latter contest, everyone who was responsible for any sales at all getting a check for some amount. Strangely enough, the three grand prizes in the first contest were won by two main line men and an office girl, respectively.

One indirect but apparent effect on the campaigns was the increasing operating efficiency of the employees in their routine duties. One other question which might naturally arise in connection with increased sales would be in regard to delinquent accounts. A check-up of delinquent appliance accounts at the end of the campaign reveals the fact that instead of showing an increase in delinquent accounts, a very marked decrease in such delinquencies was obtained.

A new campaign along similar lines was started on March 1, 1935, and will run through May 30, and indications are that it will be the most successful contest which the company has held. For instance, on the first day in which the present contest was begun, the employees were asked to make a special effort on a combination sale of piping job, hot water heater, and cooker. By noon of the same day, in one town, 26 such combinations had been sold.

Municipal Project Refused Grant of PWA Loan

The application of Vega, Texas, for a $93,700 PWA loan to construct a pipe line from Amarillo, Texas, to the city, has been denied. The city of Vega proposed to buy its gas supply from the Amarillo Gas Co. and sell it to Bushland and Wildorado, Texas, enroute to Vega.

New Manager for Rio Grande

Joseph Jordan, of Clinton, Okla., has been made manager of the Rio Grande Gas Co., McAllen, Texas, to succeed Ralph B. Boyd, who was transferred to Mount Vernon, Ohio, to resume his former work with the Hope Engineering Co., operators of the Rio Grande Valley Gas Co.

Veatch Managing Newberg Branch

James Veatch, connected with the Portland Gas and Coke Co. for several years, has been made manager of the Newberg, Ore., branch of the company.

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

Los Angeles, Calif.
Davenport, Iowa.

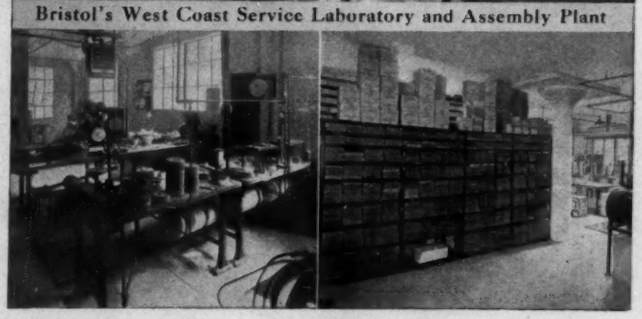
San Francisco, Calif.
Houston, Texas.

NOW!

Service Laboratory and Assembly Plant

to serve your instrument needs promptly

Bristol's West Coast Service Laboratory and Assembly Plant



Whenever you need spare parts for your Bristol's Recorders or additional supplies of charts or ink, get in touch with our San Francisco or Los Angeles Branch Office. Perhaps you may even wish to remodel an old recorder in order to use it under today's changed working conditions. If you do, you will find our facilities complete to serve your instrument needs promptly.

In returning recorders for reconditioning or modernizing, pack carefully and ship direct to The Bristol Co., 311 Minna St., San Francisco. Also send shipping notice and order authorizing work to nearest branch office.

THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco...747 Warehouse St., Los Angeles...
Branch Factory: 311 Minna Street, San Francisco.

BRISTOL'S

TRADE MARK REG. U.S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889

The NO-OX-ID Master Coat Gives Long Protection

Illustration shows application of NO-OX-ID-IZED Wrapper to an 8" gas line in Texas. Under this Wrapper is a coating of NO-OX-ID which gives positive chemical and mechanical protection to the metal surface. Over the Wrapper is applied NO-OX-ID Service Coat which toughens into a moisture-proof, protective covering with high resistance to soil stresses.

The NO-OX-ID Master Coat, because of the long protection, brings the average annual cost of preventing corrosion and rust to a very low figure. Employed in both new and reconditioning work. Inquiries invited.

DEARBORN CHEMICAL COMPANY

NO-OX-ID IRON-RUST The Original Rust Preventive

Los Angeles:
807 Mateo Street
Phone TRinity 3385

San Francisco:
421 Bryant Street
Phone SUtter 8688

Replacing Service Men with "Sales Mechanics"

(Continued from Page 15)

men in the field are more than capable of meeting the public from a sales approach.

Consider the intense competition, now existing in all lines of retail business, for a share of the purchaser's dollar. If the gas utilities expect their public to enjoy modern gas appliances, then they must be prepared to maintain a continuous sales campaign, sufficiently active to get the public's attention.

The gas business is not interested in the merchandising, alone, but particularly in the threat of electric competition. There may not be economic merit in substituting electric energy for gas fuel, but public opinion and expectancy may overlook the economic advantages of gas. The sale of modern gas appliances is the safe and best defense for the gas industry.

Keeping the consumer sold on gas and interesting the public in modern gas appliances is a selling job. If personal contact with the consumer is not the best selling method, then why the salesman? If salesmen have value, then the greater the number the greater the contacts, and the greater the accomplishments.

A utility's New Business Department is considered sufficient by many companies if it has one salesman for 10 to 15 thousand accounts. The same utility will have a ratio of one customer service employee for every 1,500 to 2,000 consumers.

It is time the utility recognized the opportunity offered by its service contacts. Men so employed are sales allies. Such men could be selected for or trained in selling. Their jobs offer such an easy contact with the consumer, under conditions that make selling easy—that is, the consumer's interest in the subject of appliances, or gas service, which accounts for the service man being on the premises.

A new set-up within the utility is in order. Instead of relegating the customer service work to a Distribution Department, more or less mechanically-minded, it should be part of and under the supervision of the Sales Department.

Times have changed, and are still changing, and the gas utilities must adjust themselves if they are to hold their position—if they hope to expand. Then, all their resources must be directed toward load-building.

The one and first adjustment should be a shift of the customer service organization to be a part of the Sales Department.

MODERN EFFICIENT

Safe
Quick
Positive!

Pacific Forced Air Unit Heater *Illustrated*

PACIFIC'S *Complete* LINE of Gas Appliances Include:

- Floor Furnaces • Cabinet Heaters
- Wall Heaters • Gas Steam Radiators
- Radiant Heaters • Water Heaters
- Gravity Furnaces • Forced Air Furnaces • Unit Heaters

Write for complete information on any or all items

Pacific Gas Radiator Co.
Main Office and Factory
Huntington Park, California
Oldest and Largest Manufacturer of Gas Heating Appliances in the West

Ideal Gas Consumption Curves for Brick-Firing

(Continued from Page 14)

bottom of the combustion chamber at the edge of the kiln with the draft open at the heads. This procedure is carried out to the 17th hour when a substantial increase in the gas demand is made. At the 20th hour the draft is gradually opened up towards the center and the gas demand gradually increased up to the 50th hour, which is the peak demand. By this time the draft for the entire kiln has been opened and the heads closed up again at least 10 feet from each side of the kiln. At the 55th hour the kiln begins to show signs of heat absorption at the top, requiring a very slight decrease of gas input to hold the arches at the same temperature. At the 60th hour the top is completely closed off and from then on the gas input gradually declines as the heat reaches the top, which should result in maintaining the same temperature on the arches. It can be seen readily that on the actual curve between the 68th hour and the finish of the burn considerable trouble was had in regulating the gas input for this kiln.

As kilns of different sizes must be burned we have used the ideal curve as a basis of calculating the gas input hour by hour on other size kilns. Regardless of size they would all require 88 hours. The kilns are so constructed that increasing their size is accomplished by increasing their length, without increasing the height or width. We have reduced this curve to cubic feet of gas per hour per thousand brick so that if we have a 375,000 brick kiln to burn we know that on the 20th hour we should consume 53 cubic feet of gas times 375, a demand at this hour of 19,875 cubic feet. On Page 14 are charts of ideal curves for three sizes of kilns—375,000 brick (34 burners and 17 arches); 353,000 brick (32 burners and 16 arches); and 331,000 brick (30 burners and 15 arches). These charts will be plotted hour by hour, actual consumption against ideal curve, as the burn progresses, to show results being obtained.

Bay City and Saginaw, Mich. May Get Natural Gas

Michigan Natural Gas Corp., Muskegon, has filed a petition with the Michigan Public Utilities Commission for permission to gather natural gas in the Isabella, Mecosta and Montcalm Counties for delivery to the Consumers Power Co., to supply Bay City and Saginaw, Mich. In 1934, the Consumers Power Co. took over operation of the distributing system of the Michigan Federated Utilities Corp. in Gratiot County.

Reduced Rates for Hardin, Mont.

The Big Horn Oil and Gas Development Co., Hardin, Mont., has put into effect a 20 per cent reduction in natural gas rates to business houses and residences in that city. Under the new rate schedule Hardin will have the lowest minimum gas rate of any city in Montana.

DIRECTORY

Byllesby Engineering and Management Corporation

Wholly-owned subsidiary of Standard Gas and Electric Company

231 South La Salle Street, Chicago
New York Pittsburgh San Francisco

• HYDRAUGER •
MODERN HORIZONTAL BORING MACHINE
For Underground Installation of Pipe and Conduits. Avoids damage to costly pavements and saves time. Send for Bulletin.
HYDRAUGER CORPORATION, Ltd.
116 New Montgomery St. • San Francisco, California

SMITH-EMERY CO.
CHEMISTS — ENGINEERS — INSPECTORS
Technical service for gas producer and distributor, appliance manufacturer and dealer
920 Santee Street Los Angeles, Calif.

SUBSCRIPTION ORDER BLANK

WESTERN GAS
810 So. Spring St., Los Angeles, Calif.

Gentlemen: Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of your invoice, remittance will be sent to cover (1 year $2.00) or (2 years $3.00). Other than U. S. $3.00 per year.

Name .....

Title .....

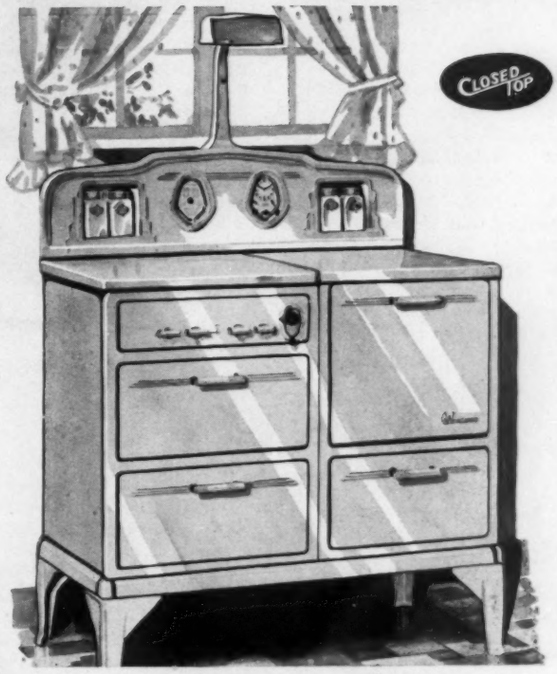
Company .....

Address .....

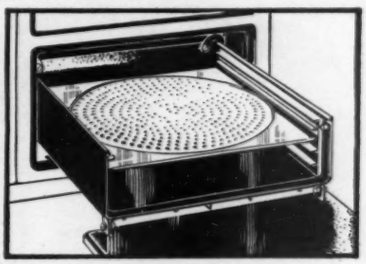
City and State .....

Date .....

WEDGEWOOD'S NEW COOKING PRINCIPLES!



Patented ASTOGRIL BROILER



This latest type broiler consists of a thick cast aluminum grill and circular reservoir within a roller-bearing mounted pull-out drawer. The grill is preheated and sears on both sides simultaneously to seal in juices and improve flavors. It broils small pieces like oysters, bacon, vegetables, etc. that would fall through a grated type broiler. It is convenient to use and very easy to clean. Makes broiling the better and healthier way of cooking.

SPEED *plus* SIMMER BURNERS

A 2-in-1 aluminum burner operated by a single gas valve. The entire burner or the simmer flames can be used alone as desired. Without using special utensils the simmer flames make waterless or semi-waterless cooking possible on every top burner! This method of cooking is healthier, tastier, more convenient. Avoids excessive steam and odors in the kitchen—pots do not boil dry or scorch. Descriptive folder mailed on request.

JAS. GRAHAM MFG. CO.
San Francisco, Los Angeles and Newark, Calif. • Portland, Oregon
OVER 1,000,000 SATISFIED USERS IN THE WEST

P. G. and E. Reviews 5 Years of Natural Gas

THE fifth anniversary of the introduction of natural gas to northern California by the Pacific Gas and Electric Co. brings to light some interesting figures revealing the benefits which have accrued to gas consumers in this territory, in the form of decreased rates and increased fuel efficiency. It is estimated that, as a direct result of the conversion from 550 B.t.u. manufactured gas to 1100 B.t.u. natural gas, the revenue of the company was reduced by 40 per cent. During the five years since the conversion, the gross revenue has been built back to approximately its former relative status by domestic, commercial and industrial load-building.

In the domestic field alone, the cumulative rate reduction since 1928 totals $46,000,000, which represents the saving to consumers over the rates as they were before natural gas was introduced. Also, it will be seen below that these savings have practically offset the cost of new installations by consumers.

P. G. and E. Domestic Sales

1929 (550 B.T.U. GAS)

$16,108,572 —Revenue
16,172,245.3—M c.f. Sales
88,847 —Billion B.t.u.

1934 (1150 B.T.U. GAS)

$13,785,558 —Revenue
11,904,782.8—M c.f. Sales
136,905 —Billion B.t.u. (Increase of 65 per cent.)

The following figures show domestic appliance sales during this five-year period:

Domestic Appliance Sales by P. G. and E. and Dealers—1930 to 1934, Inclusive.

	Total 5 Years
Ranges	126,765
Cookers	4,888
Automatic Water Heaters	66,623
Non-Automatic Water Heaters	30,188
Furnaces and Boilers	32,068
Floor Furnaces	29,210
Circulators	51,316
Radiators	2,885
Radiant Heaters	15,523
Wall Heaters	768
Conversion Burners	33,653
Units	393,887
Dollars	$36,982,885

The foregoing figures show that the investment of $36,982,885 by consumers on new appliances has been more than offset by the $46,000,000 cumulative rate reduction since 1928. And, while the company's revenue has been built to approximately its previous level, it is also to be pointed out that further increase of the load will be more difficult as it approaches the saturation point.

FULTON
CUT-OUT LATCH REGULATOR

It Stops the Flow of Gas if Pressure falls too low

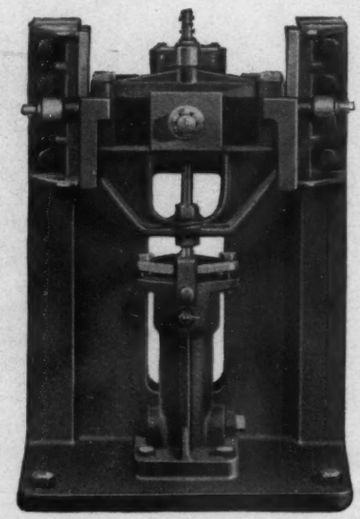
ON a low-pressure burner or furnace, the Fulton Cut-Out Latch Regulator stops the flow of gas if pressure falls below the desired minimum. Whenever that happens, the cut-out latch will operate automatically to bring the valve to its seat and lock it there. Flow will not resume until the operator goes to the valve and opens it by hand. This eliminates completely the hazard for which the regulator is designed. Write for C-F Bulletin 2987.

CF

The Chaplin-Fulton Manufacturing Company
28-40 Penn Avenue Pittsburgh, Pa.

New Dearborn Chemical Pump Now on Market

A new chemical pump is announced by the Dearborn Chemical Co. It was developed especially for pumping exact quantities of water treating chemicals into water supplies at intervals, dependent upon the rate of water flow, although the pump is adaptable to any type of liquid or semi-liquid chemicals and for close proportioning of coagulants.



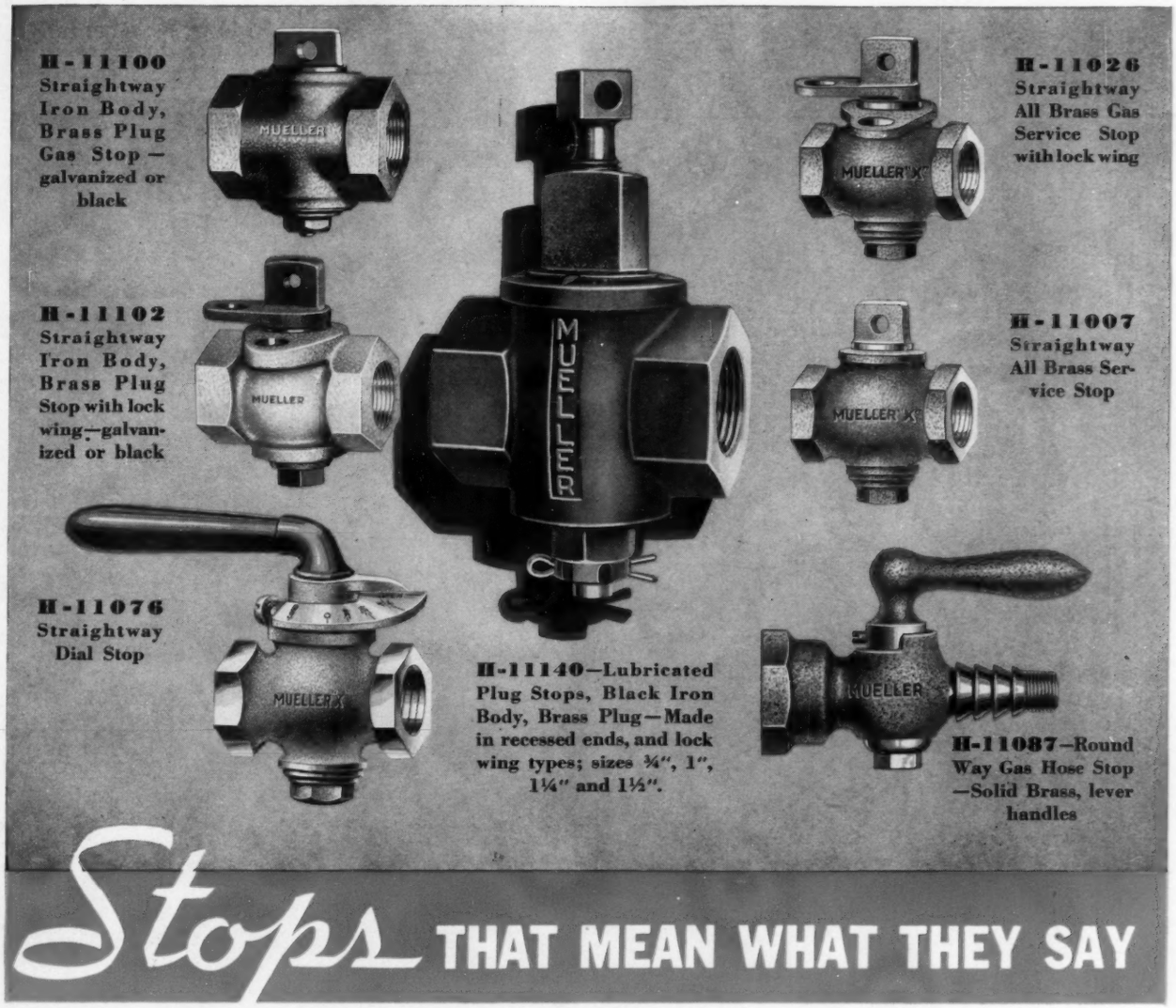
Centered ball bearings and guided plunger make for smooth, steady action, without lost motion at all operating speeds. The stroke adjustment can be set accurately from 0 to 3 inches. The plunger is adjustable for complete cylinder displacement, eliminating air pocketing. All adjustments are made easily with ordinary tools. Plungers are special alloy and all working parts are nickel semi-steel. The plungers and cylinders are interchangeable from ½ inch to 3 inches diameter. The ½-inch cylinder operates safely up to 1800 pounds pressure, the 1-inch to 1000 pounds. The pump is pressure lubricated. The new pump may be operated by water power, electric motor, ratchet or reciprocating motion, chain or belt drive. Its height overall is 23½ inches, and its approximate weight 125 pounds. Inquiries may be addressed to the company at 310 South Michigan Avenue, Chicago, Ill.

Glen Blauvelt Supervising Sales from Beloit, Kan., Headquarters

Glen Blauvelt, chief clerk of the Nebraska Distributing Co.'s Superior, Neb., office, has been promoted and transferred to Beloit, Kan., as sales and service superintendent. He will direct merchandise sales in 23 towns in the Beloit district, working directly under Jess Adams, manager of that group of Gas Service Co. properties.

New Managers for So. Gas Utilities

Judson Smith, of Beaumont, Texas, has been made manager of the Southern Gas Utilities Co.'s Sequin, Texas, office, succeeding Sam R. Ricks, who will manage the company's property at Orange, Texas.


H-11100
Straightway Iron Body, Brass Plug Gas Stop—galvanized or black
H-11102
Straightway Iron Body, Brass Plug Stop with lock wing—galvanized or black
H-11076
Straightway Dial Stop
H-11140—Lubricated Plug Stops, Black Iron Body, Brass Plug—Made in recessed ends, and lock wing types; sizes ¾", 1", 1¼" and 1½".
H-11026
Straightway All Brass Gas Service Stop with lock wing
H-11007
Straightway All Brass Service Stop
H-11087—Round Way Gas Hose Stop—Solid Brass, lever handles
MUELLER

Stops THAT MEAN WHAT THEY SAY

Of all equipment made in Mueller plants, nothing is so simple in form as ground plug stops—or so difficult to manufacture! To manufacture stops that mean what they say, even when subjected to the high air pressure tests submerged in liquid, calls for a degree of precision that is found in few manufactured products.

As one of the oldest and largest manufacturers of this class of equipment, Mueller Company has developed elaborate facilities for achieving this precision that means so much to your business and our business. The methods include laboratory control of materials, special machinery for machining plugs and grinding them into the bodies—to mirror smoothness and microscopic contact throughout the entire tapered section.

This care is reflected in the record of Mueller Brass Goods. It explains why *all* Mueller Stops work right year in and year out—under all service conditions.

A number of typical Gas Stops are illustrated above—but they are only a small part of the wide range of types and patterns illustrated in Section 3 of your Mueller Gas Catalog H.

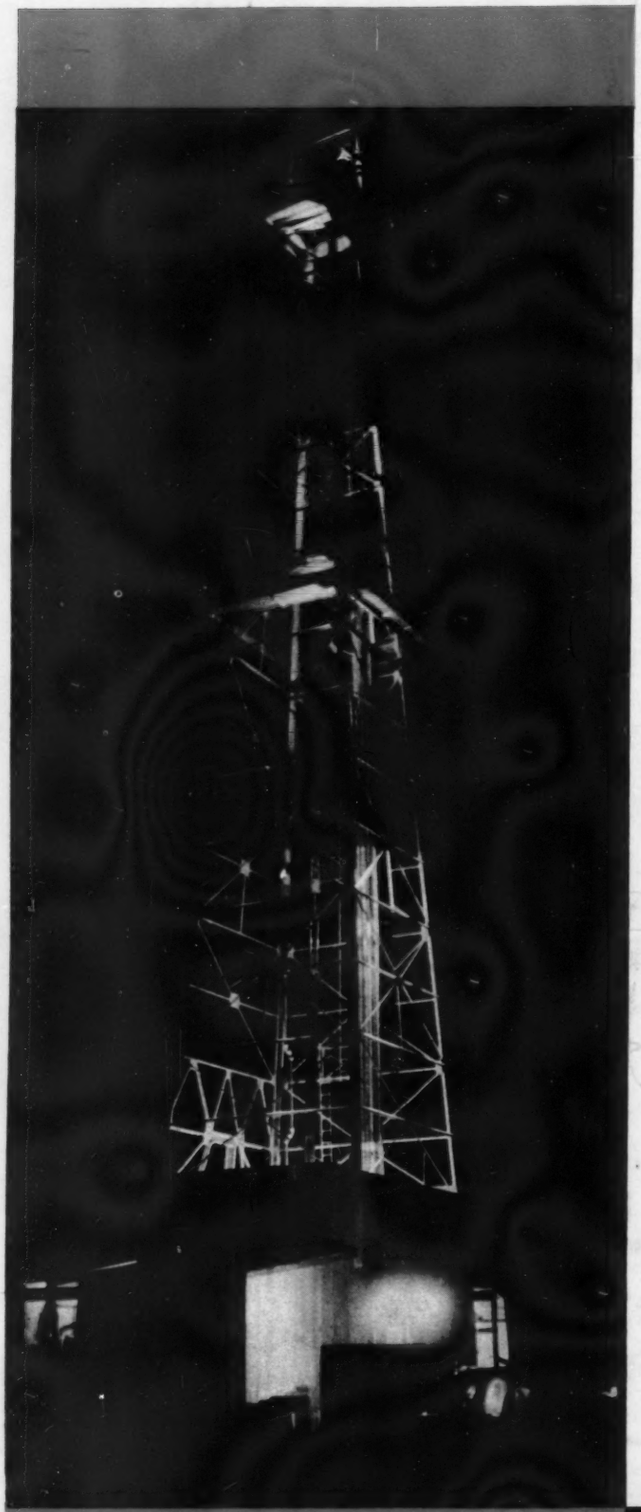
MUELLER CO., Decatur, Ill.

Factories: **Decatur, Ill., Chattanooga, Tenn., Los Angeles, Calif., Sarnia, Ont.**
Branches: **New York and San Francisco**

MUELLER

GAS DISTRIBUTION EQUIPMENT

Gas Stops
Service Stops
Lock Wing
Meter Stops
Angle Union
Stove Stops
Dial or Indicator Stops
Hose Stops
Lubricated Plug Stops



A CONTRAST BASED ON facts

It is difficult by the hot process method of pipe manufacture to produce a product that is truly round. Furthermore, the wall thickness will vary as much as 12½ per cent. When threads are cut on this pipe, they are not of uniform depth, and a variation in the thickness of metal under the threads is a natural conclusion.

In contrast, Electric Weld Casing and Tubing, made by Republic under their exclusive patents, is formed cold from flat-rolled steel of uniform wall thickness. This uniformity of wall thickness is carried through to the finished pipe. Thread this pipe and not only are the threads uniform in depth, but the thickness of the metal under the threads must be the same.

To operating men this means that Republic Electric Weld Casing and Tubing can be safely set to as great a depth as any other casing or tubing with less chance for failure, because the metal thickness is a known quantity.

Republic has a new 64-page hand book on setting depths and bursting pressures for all sizes and grades. Send for your copy.

Republic Steel
CORPORATION
GENERAL OFFICES · · · YOUNGSTOWN, OHIO

REPUBLIC
ELECTRIC WELD
CASING • TUBING

REPUBLIC STEEL